Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 14, No. 1 **Fall 1994**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

5:30-6:30 PM—Board Meeting, Room B
6:30-7 PM—Social Meeting, Room A
7-9 PM—Regular Meeting, Auditorium

October 5—David Tillman, UM Professor of Ecology, *Prairie Biodiversity: Causes and Value;* POM:* Joe-Pye-Weed (*Eupatorium maculatum*) by Char Bezanson.

November 2—James Calkins, UM Professor, Horticultural Science, *Effects of Site on Forest Ecology;* annual seed exchange.

December 7—Alan Olson, DNR Forestry, *Pests and Diseases of Hardwood Trees in the Metro Region;* POM: giant reed grass (*Phragmites australis*) by Steve Eggers.

January 4, 1995—Bettina Darveaux, UM Plant Biology, *Benefits of Growing Native Prairie Grasses;* POM: prairie drop-seed (*Sporobolus heterolepis*) by Dean Hansen.

February 1—Renay Leone, Minnesota Land Trust, *Minnesota Land Trust: Preserving Native Landscapes;* POM: partridge-pea (*Cassia fasciculata*) by Douglas Owens-Pike.

March 1—Stan Tekiela, author. *Eatable Mushrooms: Gearing Up for Morels;* introduction to field trips; annual meeting and election of Board Members.

April 5—Steve Eggers, ecologist, *Minnesota Prairie Preserves: A Photographic Journal;* POM: reed-canary-grass (*Phalaris arundinacea*) by Charles Umbanhower.

May 3—Plant Photography Contest, Minnesota Nature Photography Club; Annual Plant Sale.

***POM = Plant-of-the-Month**

Minnesota Valley National Wildlife Refuge is a national refuge and a Twin Cities resource

This 34-mile corridor of marsh, grassland and forest that stretches from Bloomington to Jordan was established by a congressional act of 1976, and is managed by the US Fish and Wildlife Service. This refuge is one of the few urban wildlife refuges where wild coyotes, bald eagles, badgers, and beavers live next to 2.2 million people.

The Visitor Center is housed in an architecturally acclaimed building that overlooks the valley and includes a 125-seat auditorium, a bookstore, and a resource library, and, a two-story fireplace.

The Louisville Swamp is a 2,400-acre mix of marsh, bottom hardwoods and oak savannah, and features 13 miles of hiking, cross-country skiing, horseback riding, and biking trails. Long Meadow Lake comprises 2,200 acres of marshes, fields, hardwood forested bluffs and bottomlands that are accessible by five miles of hiking and cross-country ski trails. Migrating waterfowl and native prairie can be seen at the Black Dog Preserve, that also includes a two-mile hiking trail.The Bass Ponds Enviromental Study Area is a system of interconnecting artificial ponds open to schools and visitors interested in studying nature and water management first hand. A half-mile self-guided trail is there.

Other areas yet to be developed include the Bloomington Ferry (380 acres), Upgrala (2,400 acres), and Chaska Lake (580 acres).

Note new location from October 5 on at the **Minnesota Valley National Wildlife Refuge** (see address in column 1, and map on back page). Grace Gray volunteered to coordinate car pooling. *But please call well in advance!*

Editorial

The Theater of Seasons—that is how Minnesota is portrayed. If so, then it must be drama, and drama in four acts. Which season is Act I? Presumably for plants, spring is Act I because life begins in spring with germination of seeds. Plants flower in summer for Act II, mature and produce seeds in fall for Act III, and become dormant or die in winter for Act IV.

But humans and organizations have a different order of seasons. They are like winter annuals in which seeds germinate in fall (Act I), form rosettes or multiple crowns during winter (Act II), and flower and fruit in spring (Act III) or early summer (Act IV). Even humans generally conceive in fall and bring forth offspring in spring or early summer! That, too, makes fall Act I.

Concerts, lectures, theater, and schools and colleges all begin in fall, making fall Act I. MNPS is no exception.

MNPS is starting Act I at a new location, the Minnesota Valley National Wildlife Refuge, with an entirely new cast of characters as listed on page 1, column 1. To better appreciate Acts II to IV, one must experience Act I.

The officers and Board of Directors have orchestrated a slate of speakers and other events to fill all the Acts with dramatic appeal for the entire season. We anticipate you will want to avail yourselves of these programs and be there at curtain call for each Act of the season. Let the Season begin!

MNPS wins Red Ribbon at State Fair for Display Board

The Display Board, set up in the Minnesota State Horticultural Society showroom at the Minnesota State Fair, August 26, 1994, was awarded Second Place for the second year in a row in the category of *Specialty Plant Societies*. The North America Rock Garden Society was awarded the Blue Ribbon for first with its display. Roy Robison had loaned five native plants for the exhibit: *Artemisia ludoviciana, Athyrium filix-femina, Lobelia cardinalis* and *L. siphilitica*, and *Tiarella wherryi*.

Plant Lore

What is evening primrose?

Its name is *Oenothera biennis*, a biennial native to North America, and introduced into Europe.

How did it get its name?

The genus name was used by Theophrastus but the specific epithet refers to its being a biennial, even though the rosette stage may persist for two seasons, then bloom the third year. The flowers are yellow and resemble a primrose (*Primula* spp.) and bloom late afternoon from mid-summer to fall.

What is the significance of its blooming in the evening?

The flowers bloom sometime between 4 and 10 PM, and as the petals open they release a fragrance into the evening air. Night-flying moths are attracted to the odor and drink nectar from the long calyx tubes and inadvertently pollinate the plants. The pollen grains are attached to each other in tiny sticky threads and are picked up by moths, and even bees.

Do other insects visit evening primrose?

In early summer, spittlebugs feed on juices on lower leaves, sometimes causing leaves to curl like spinach leaves. The noctuid moth that feeds on flowers is the same species found as larvae in the buds. During the day moths may rest among the partially closed flowers and their pink and yellow wings blend with the petals.

Are plants attractive in other ways besides flowers?

Goldfinches peck at capsules to eat the seed which plants produce in abundance—an average plant produces about 6,000 seeds. The capsules persist on the plant and look like flowers on a stalk, and have been used in dry arrangements.—*Adapted from D. & L. Stokes, A Guide to Enjoying Wildflow-*

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

Membership dues are $10 per year for regular members and includes subscription to the newsletter; dues for students and seniors are $8, for family $12, for institutions $20, and donors $25. Checks can be made out to: Minnesota Native Plant Society, and sent to : Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

MNPS Board Members held retreat July 10, 1994 at the Minnesota Valley National Wildlife Refuge

This meeting was called to order by President Becky Schirber. Others present were Nancy Albrecht, Chase Cornelius, Diane Hilscher, Linda Huhn, Rick Jannett, Val O'Malley, and Roy Robison.

Guidelines for preparation of the Newsletter (MPP) were reviewed, revised and approved. Mailing deadlines were set at September 1, January 5, March 1, and June 15 for the four issues. The Publications Committee will keep member records current and print mailing labels, maintain bulk mailing permit, and arrange to have the newsletter printed.

The Secretary was given the responsibility for labeling, sorting and mailing the newsletter.

Bylaws were suggested for the Nominating Committee to regularize the proceedings for selecting candidates. A timetable of Board meetings for the year was set up. 1) The Nominating Committee will be announced in November, 2) candidates will be solicited and introduced in December, 3) profiles of candidates are planned for the January newsletter, 4) ballots will be mailed to members in February, and 5) the annual meeting and election will be in March.

The Symposium timetable was as follows: design the brochure by December 15, print it by January 15, mail it by February 1, and reprint the schedule in the spring newsletter (March 1).

Program Chair Diane Hilscher proposed procedures were approved for finding speakers and other arrangements with program

Other goals discussed, both long and short term, included a speakers' bureau, videos of meetings, publicity posters, liaison with other organizations, outstate chapters, and membership promotion.

Society for Ecological Restoration names Falk as director

Biodiversity expert Donald A. Falk has been appointed executive director for this Society (SER) headquartered in Madison, Wisconsin. SER, founded in 1987, promotes the science and discipline of ecological restoration as a means of sustaining diversity of life on Earth.

Falk had coedited (with K. Holsiger) a book on the biology of threatened plant species, entitled *Genetics and Conservation of Rare Plants* (Oxford Press, 1991). A new work *Restoring Diversity* will be released by Island Press late in 1994.

Information about SER can be obtained by contacting it at 1207 Seminole Highway, Madison, WI 53711; (608) 262-9547.

Prairie Wetlands Ecosystem Workshop planned for North Dakota in October

This Workshop will be held October 3-5, 1994, at the Radisson Inn, Bismarck, ND. Wetlands in North Dakota, South Dakota, Minnesota, and Montana will be discussed. Two fields trips are available also. The meeting is organized by the Thorne Ecological Institute with funding from US EPA Region 8 and cosponsors. For more information, contact Thorne Ecological Institute, 5398 Manhattan Circle, Suite 120, Boulder, CO 80303; (303) 499-3647 or fax (303) 499-8340.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson.

Botanical potpourri

GLEANINGS FROM NEWSLETTERS

Oaks in droughty forests of the Missouri Ozarks regenerate largely by sprouting, but Nuttall oak in southern bottomland forests may produce more than 100,000 seedlings per acre after a bumper acorn crop. (*NC News*, July 1994)

A half-cup serving of dandelion greens provides 280% of the adult RDA for beta carotene (vitamin A precursor) and more than 50% of the RDA for vitamin C, plus magnesium, calcium, iron, and potassium, as well as having a high lecithin content. (*Twin Cities' Urban Gardener*, Summer 1994)

The Lower St. Croix Management Commission in its report indicated that since 1972, when its master plan was adopted, the National Park Service has acquired 4,651 acres in fee simple and 3,500 acres in scenic easements, and, the states of Minnesota and Wisconsin have acquired 2,982 acres of land and 262 of the proposed 6,105 acres of scenic easements. (*St. Croix Riverkeepers Journal*, Summer 1994)

The Susie Islands of northern Minnesota in Lake Superior support a host of subarctic plants otherwise found only hundreds of miles to the north according to a survey of the Great Lakes basin led by Susan Crispin and reported by Greg Breining. (*Nature Conservancy* 44[4]:6, 1994)

In Minnesota, the historic tallgrass prairie area has been estimated to have been 7.3 million hectares but now is estimated to be 30,350 hectares, a 99.6% decline, according to F. Samson of the USDA Forest Service in Missoula, Montana, and F. Knopf of the USDI National Ecology Research Center in Fort Collins, Colorado. Less than 1% of this area is currently being protected. (*BioScience* 44:418-421, 1994)

Some plant literature for the naturalist's bookshelf

General

Dunk, G. 1994. Ferns: A Comprehensive Guide to Growing Ferns for the Home Gardener. 2nd ed. Angus & Robertson: Sydney. 183 pp.

Gledhill, D. 1989. The Names of Plants. 2nd ed. Cambridge Univ. Press, NY. 208 pp.

Mabberley, D.J. 1987. The Plant-book. Cambridge Univ. Press, NY. 706 pp. (reprinted with corrections 1989).

Ogden, E.C., and **Mitchell, R.S.** 1990. Identification of Plants with Fleshy Fruits. Univ. State of New York Bull. 467. 97 pp. (Includes PC Diskette).

Ownbey, G.B., and **Morley, T.** 1991. Vascular Plants of Minnesota. A Checklist and Atlas. University of Minnesota Press, Minneapolis. 307 pp.

Smith, W.R. 1993. Orchids of Minnesota. University of Minnesota Press, Minneapolis. 172 pp.

Stokes, D.W. and **Stokes, L.Q.** 1985. A Guide to Enjoying Wildflowers. Little Brown, Boston. 371 pp.

Vance, F.R., Jowsey, J.R., and **McLean, J.S.** 1984. Wildflowers of the Northern Great Plains, 2nd ed. University of Minnesota Press, Minneapolis. 336 pp. (reprinted 1991)

Edible plants

Elias, T.S., and **Dykeman, P.A.** 1982. Field Guide to North American Edible Wild Plants. Van Nostrand Reinhold Co., NY. 286 pp.

Medsger, O.P. 1966. Edible Wild Plants. Macmillan Co., NY. 323 pp.

Peterson, L. 1978. A Field Guide to Edible Wild Plants. Houghton Mifflin,Boston. 330 pp.

Medicinal plants

Blackwell, W.H. 1990. Poisonous and Medicinal Plants. Prentice Hall, NJ. 329 p.

Dobelius, I.N. 1986. Magic and Medicine of Plants. Reader's Digest Assn., Pleasantville, NY. 464 pp.

Duke, J.A. 1985. CRC Handbook of Medicinal Herbs. CRC Press, Boca Raton, FL. 704 pp.

Foster, S., and Duke, J.A. 1990. A Field Guide to Medicinal Plants. Houghton Mifflin, Boston. 366 p.

Kapoor, L.D. 1989. CRC Handbook of Ayurvedic Medicinal Plants. CRC Press, Boca Raton, Fl. 416 pp.

Lewis, W.H., and **Elvin-Lewis, M.P.F.** 1977. Medical Botany. John Wiley, NJ. 515 pp.

Millspaugh, C.F. 1892. American Medicinal Plants. Dover Publ., NY. 806 pp. (1974 reprint).

Poisonous plants

Hardin, J.W., and **Arena, J.M.** 1974. Human Poisoning from Native and Cultivated Plants. 2nd ed. Duke University Press, Durham, NC. 194 pp.

Kingsbury, J.M. 1964. Poisonous Plants of the United States and Canada. Prentice-Hall Inc., Englewood Cliffs, NJ. 626 pp.

Lampe, K.F., and **McCann, M.A.** 1985. AMA Handbook of Poisonous and Injurious Plants. Amer. Medical Assn., University of Chicago Press. 432 pp.

Levy, C.K., and Primack, R.B. 1984. A Field Guide to Poisonous Plants and Mushrooms of North America. Stephen Greene Press, Lexington, MA. 178 p.

McCain, J.W., Goetz, R.J., and **Jordan, T.N.** 1985. Indiana Plants Poisonous to Livestock and Pets. Purdue Univ. Exten. Service. WS-9. 114 pp.

Spoerke, D.G., Jr., and **Smolinske, S.C.** 1990. Toxicity of Houseplants. CRC Press, Boca Raton, FL. 244 p.

Stephens, H.A. 1980. Poisonous Plants of the Central United States. University Press of Kansas, Lawrence. 165 p.

Waller, G.R., and **Nowacki, E.K.** 1978. Alkaloid Biology and Metabolism in Plants. Plenum Press, NY. 294 pp.

Fen plants (M. J. Loeschke)

Curtis, J.T. 1959. The Vegetation of Wisconsin: An Ordination of Plant Communities. University Wisconsin Press, Madison.

Eggers, S.D., and **Reed, R.M.**1987. Wetland Plants and Plant Communities of Minnesota and Wisconsin, US Army Corps Engineers. St. Paul, MN.

Leoschke, M.J., and **Pearson, J.** 1988. Fen—a special kind of wetland. Iowa Conservat. 47[3]:16-19.

Moran, R.C. 1981. Prairie fens of northeastern Illinois: Floristic composition and disturbance, pp.164-166, *in* The Prairie Peninsula—in the "shadow" of Transeau, R.L. Stucky and K.J. Reese, eds. Proc. Sixth North American Prairie Conf. Ohio Biol. Surv. Notes No. 15, Columbus, Ohio.

Pearson, J.A., and **Loeschke, M.J.** 1992. Floristic composition and conservation status of fens in Iowa. J. Iowa Acad. Sci. 99[2-3]:41-52.

Smith, W.R. 1983. A range extension of *Scleria verticillata* in Minnesota. Michigan Bot. 22:27-30.

Minnesota Native Plant Society
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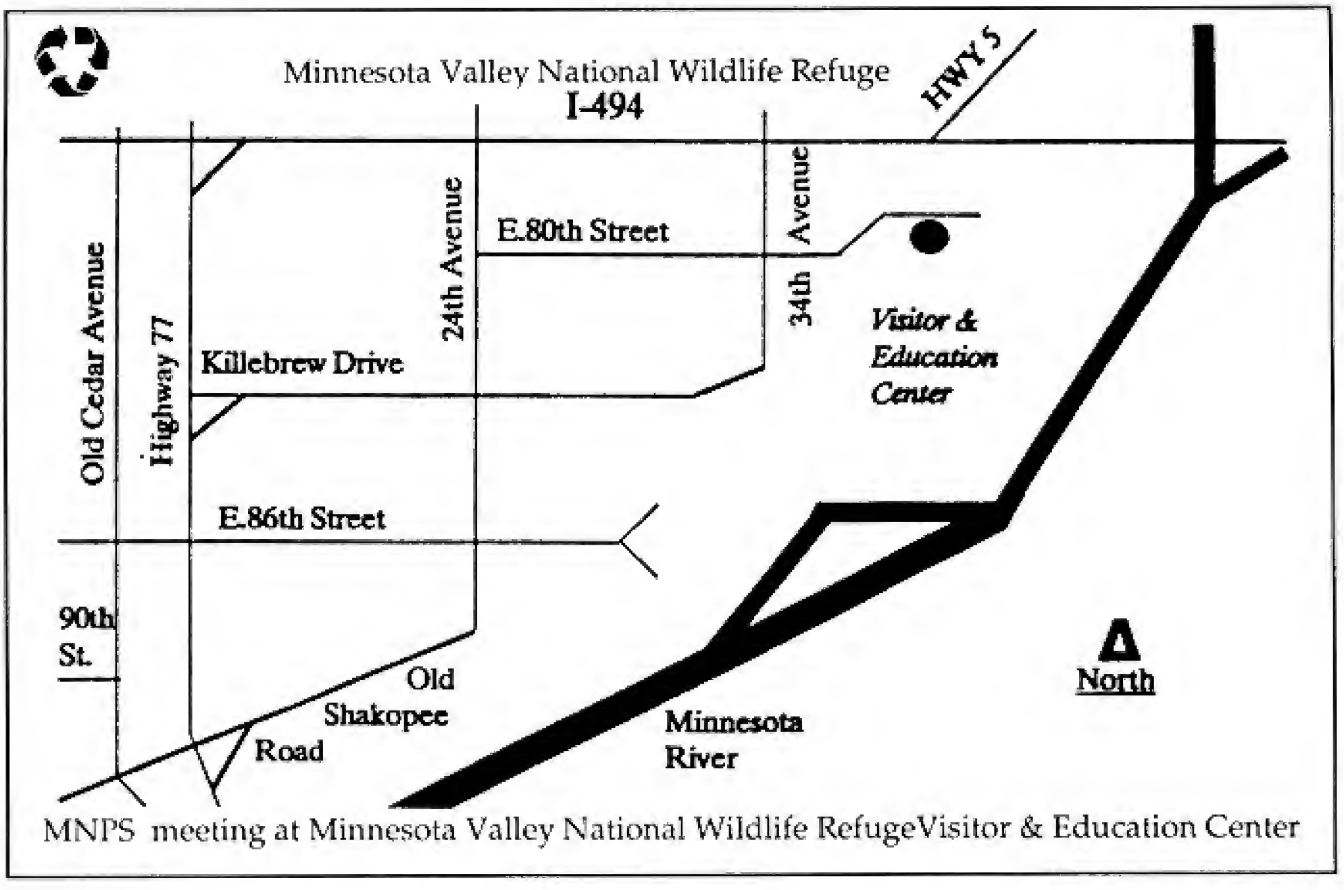

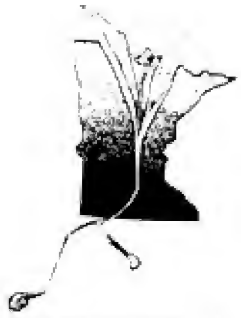

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•For **Winter Weather Emergency**, contact Diane Hilscher, or her answering phone message to find out if the **Center** is open or not.

Biodiversity, habitat destruction and the extinction debt

by David Tilman

Ever since Darwin, Wallace, and other naturalists began cataloging biological diversity, ecologists have wondered why the earth harbored such a rich array of species. This became known as the "paradox of diversity" because available theory predicted there would be no more coexisting species than there were resources limiting them. Our research in the savannas and grasslands of the Cedar Creek Natural History Area in east-central Minnesota has shown that nitrogen, water, and light are the only resources limiting plants. Three limiting resources, however, could not explain the long-term coexistence of more than 250 native plant species in a grassland field.

Our research, begun in 1982, revealed that the abundance of native prairie plants was also limited by their ability to disperse. Moreover, we found a tradeoff between the ability of a species to compete for soil nitrogen versus the species' ability to disperse. Specifically, the best competitors for nitrogen were such native bunchgrasses as little bluestem and big bluestem, which allocated 75% to 85% of their growth to roots. On these low nitrogen soils, however, they only allocated a fourth to a half percent of their growth to seed, and were slow to invade fields and spread across them. In contrast, another species such as native bent grass was a poor competitor (35% to root) but an excellent disperser (30% to seed). Other grasses and forbs had intermediate tradeoff values. *(continued on page 2, column 2* ***Biodiversity...)***

This is an abstract of a talk given for the MNPS by David Tilman, University of Minnesota, at the meeting on 5 October 1994.

Editorial

Is MNPS worth supporting?

"One makes a living by what one gets. One makes a life by what one gives", so wrote Dr. Raymond P. Shafer, President of Allegheny College. Institutions and organizations succeed to the extent that its members believe in them and give of their time and talents. That 72 to 110 have attended meetings this past fall attests to the interest in MNPS and its programs. But we also need participation in the activities of the Society to do more than go to meetings, interesting as they are.

For example, we need service on *your* Board. The Board of Directors has listed some expectations from prospective board members:

- Serve a 3-year term
- Attend at least 8 of 10 scheduled board meetings
- Participate in making the symposium a success
- Accept at least one of the following responsibilities: 1) board officer, 2) chair or serve as a liaison for one of the following committees: membership, program, symposium, field trip, newsletter, conservation, publication, outreach, and finance, 3) schedule, maintain and store display board, or 4) monitor other organization's conservation efforts and legislation.

We have approximately 400 members in MNPS who represent a good cross section of plant interests and, to be sure, many are already active and busy in their own careers in these fields. It is difficult for many to take on additional responsibilities. But if one of us does not do it, then who will?

We, on the Board, ask each of you to take another look at your schedule and interests, and see if there is time and dedication to give to one of these activities, at least for a term. The more of us that participate in the Society, the more each of us will benefit from the Society's existence.

Life is more than living. The Board President, Becky Schirber, would be delighted to have you call and tell her that you are interested in one of the committees or the Board. Think about it as a New Year's resolution!

Biodiversity..., *continued from page 1*

When we built this tradeoff into a mathematic theory, we found that an almost unlimited number of plant species were predicted to coexist. Additional field tests have also supported the theory, and studies in other habitats suggest that this may be a major factor enabling numerous plant species to coexist in nature.

We next used this solution to the paradox of diversity to predict how habitat fragmentation and destruction might affect native ecological communities. We found that the best competitors were more threatened than poor competitors with extinction by habitat destruction. Moreover, we found a 50 to 500 year time delay between habitat destruction and such extinction.Thus, recent habitat destruction has created an "extinction debt." Based on the amount of habitat destruction that has occurred worldwide, the extinction debt now is from 100,000 to 300,000 species. This means that from 100,000 to 300,000 of the world's best competitors are now threatened with extinction. However, the 50 to 500 year time delay means that many of these can be rescued if habitats are restored.

Our other research has asked if the loss of biodiversity matters. Our 13-year study of 207 permanent grassland plots has shown that the more plant species there are in the plot, the more stable their productivity. Biodiversity thus helped minimize the effects of climatic variation, including drought, on the functioning of our grassland ecosystems. In total, our research has uncovered how it is that high diversity is maintained in prairie, the importance of that diversity for the long-term stability of prairie ecosystems, and the possible effects of loss of habitat on the diversity of the remaining fragments of the prairie. Efforts to preserve and restore prairie and other native plant communities can thus provide an important safeguard of our region's biological diversity.

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Effects of site on forest ecology

by James B. Calkins

ALL plant species have evolved to fit into specific niches in the environment. Plants do not exist as isolated individuals; they are integral parts of a broader ecosystem and are found in ephemeral communities of plants with similar site requirements. Plant performance on a particular site depends on interactions between the genetic potential of the plants and their environment.

Environmental factors.— Environmental factors involved in plant establishment and subsequent performance include temperature (air and soil), light (photoperiod, quality, and quantity), moisture, mineral nutrition (fertility, availability, uptake), and gas exchange (O_2 and CO_2 in air and soil). These plant growth factors are mediated by specific site attributes including geography (aspect/slope), exposure (sun, wind), soil characteristics (parent materal, structure, fertility, pH, soluble salt concentrations, porosity, water-holding capacity, aeration, compaction, surface condition, beneficial and harmful macro- and microorganism populations), elevation, latitude, drainage, precipitation, microclimate, and the presence or absence of fire.

Biotic factors.— Plant-to-plant and plant-to-animal interactions (competition and symbiosis) also play an integral role in plant establishment and performance. Competition for available resources (not necessarily unfavorable), predation or parasitism, mutual associations (symbiotic, seed dispersal, and pollination relations), allelopathy, human activity involving habitat management vs. destruction (barrier creation or fragmentation, drainage modification, erosion enhancement, fire prevention, logging practices, farming practices, species diversity reduction, pollution, and exotic species introduction) are factors that mediate performance and survival of plants.

Knowledge of site factors important.—As stewards of the environment and promotors of native plants, we must be cognizant of these genetic and environmental factors that affect plant establishment and performance. To culture and subsequently establish native plants in the landscape, growers and landscape design and installation personnel must understand the special requirements for each plant, including plant tolerance (light, pH, moisture), and specific site requirements. We must understand that most landscapes have been so extensively disturbed that they can no longer be considered native sites and will not support previously grown native species without substantial modification. Many of our most adaptable native species such as *Acer saccharinum*, *A. negundo*, *Populus deltoides*, and *Salix nigra* are scorned by the public, even individuals with a special interest in native species. This bias must be discouraged because these are the core species adapted to our environment and are an integral part of native ecosystems.

Difficulties in propagating native species.—The main reasons why many unusual native species are unavailable in the nursery trade are that they are difficult to propagate and culture especially in containers, and they are difficult to transplant and establish in a landscape setting. Most plants available in the nursery trade are tolerant of a broad range of environmental conditions and they are easy to propagate, culture, and transplant. Such plants are economical to produce and suffer relatively few losses once transplanted to the landscape. Perhaps the main factor that determines the ability of a plant to survive on disturbed sites is the capacity to survive on compacted soil, which essentially is soil low in oxygen. Many of our difficult-to-grow native species are intolerant of the compacted, low oxygen soils, and hot, dry conditions that are common in home landscapes and other disturbed sites. Protection of the soil surface with an organic mulch that protects soil from further compaction, increases soil organic matter content, maintains soil moisture, moderates soil temperature, and reduces root and crown injury associated with weed and turf management is perhaps the most beneficial cultural practice employed to promote plant survival. Culture of many of our native species requires a better understanding of their cultural requirements and the development of production systems that meet these needs. Consumers must also be educated about site modifications required prior to planting and the cultural requirements thereafter for successful establishment and long term performance.

Planting the right plant in the right place.— We should always remember that the majority of problems associated with plants, both native and exotic, in the landscape can be traced to planting the wrong plant in the wrong place. By learning the particulars of our sites and being aware of the special site requirements of each species that we are attempting to establish and grow, we can avoid many problems associated with establishment and long term survival and performance of landscape plant materals.

This is a summary of a talk given by James Calkins of the University of Minnesota Department of Horticultural Science, to the Minnesota Native Plant Society meeting, 2 November 1994.

Briefs from the Board

•It was announced that 110 people attended the October meeting, 82 the November meeting, and 72 the December meeting. John and Jackie Buffalow were thanked for their contributions in arranging for the refreshments at these meetings!

•The Board is discussing the establishment of a Finance Committee and an Outreach Committee. Finding personnel for these committees is a problem. The Board is seeking volunteers for Society activities.

•Plans for the spring symposium are underway. The topic is expected to be *Coniferous Forests—Wet and Dry*. Don Knutson will adapt this theme to the speakers and topics selected. Esther McLaughlin has agreed to serve as Facilities Chair. Several sites are being considered.

•Esther McLaughlin has been appointed by the Board to fill the membership on the Board vacated by Mark Leoschke. Esther had served previously as the Symposium Facilities Chair.

•Diane Hilscher agreed to serve as the Winter Weather Emergency Contact to handle calls as to holding of regular meetings during inclement weather (see box on page 1).

•Arden Aanestad agreed to serve as chair of the Nominations Committee. Arden had five nominees for three positions for the 1995-1996 Board.

•Video taping of regular meetings is not practical and will not be done.

•Meetings must end by 8:45 PM to enable departure of all attendees by the 9 PM closing hour. Plant-of-the-Month speakers will be limited to 10 minutes.

•A new location for MNPS display at the State Fair is being sought.

Ptelea trifoliata is not native to Minnesota

Wafer-ash or hop-tree (*Ptelea trifoliata*) included in the list of native species at the November meeting of MNPS is native to North America but *not* Minnesota. It has been planted here and arrived also by naturalizing itself on its own in river valleys, probably coming from the south. It is an attractive, shade-tolerant shrub.

As program chair, I will be cautioning speakers to be careful in identifying a plant as native to the state as of the time of the land survey of the 1890s.—*Diane Hilscher*

DNR Forestry service is free

The service that DNR Forestry provides callers is free. One can call Alan Olson (see summary on page 6) at 442-2317 for the counties that he serves (south Hennepin, Carver, and Scott) or the general DNR Forestry number 772-7925 to contact the other two foresters who serve the seven-county metropolitan region.

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Publications available from Minnesota Extension Service

Home, yard and garden publications are available from the Minnesota Extension Service. They are also available from county extension offices. Order a listing of publications from Distribution Center, 20 Coffey Hall, 1420 Eckles Ave., University of Minnesota, St. Paul, MN 55108-6069.

America's 500th National Wildlife Service refuge established in West Virginia

On 27 October 1994, the US Fish and Wildlife Service celebrated its 500th refuge at Canaan Valley, West Virginia. The Refuge System spans 92 million acres of lands and waters in the United States.

The Minnesota Valley Wildlife Refuge is one of only four national *urban* refuges, and extends 34 miles along the Minnesota River. More than 300 species of plants and wildlife are protected by this Refuge. For more information, call 612-335-2323. To become a Refuge Volunteer, call 612-854-5900.

Symposium on backyard butterflies is set for May 6 at Lowry Nature Center

The Minnesota Native Plant Society and Hennepin Parks will cosponsor a public symposium on *Attracting Butterflies to Your Backyard*. This symposium is planned for Saturday, 6 May 1995, from 8:30 AM to 3:30 PM, at the Lowry Nature Center in Carver Park Reserve, Victoria.

This symposium will feature presentations and hands-on activities. Topics will include: 1) selecting native plants and landscape designs to attract butterflies, 2) building butterfly feeders, and 3) identifying common butterflies (and their ecology). For details, call 476-4663.—*Rob Buffler*, Hennepin Parks

Seed exchange successful reports May Wright

About 100 seed packets were exchanged at the October meeting of the MNPS. These represented more than 75 species of mostly native seeds from different parts of the state—from bogs to woodlands and prairies.

Pests and diseases of native hardwood trees in the metro region

by Alan E. Olson

The metropolitan region of the Twin Cities is divided into three landscape regions: Big Woods, Oak Savanna, and Sand Plains. Each region has unique vegetative cover types and soil types. What they all have in common, however, is a number of insect and disease problems that are found during most growing seasons.

The disease problems that come to mind for most people are Dutch elm disease and oak wilt. Although Dutch elm disease is still found in the Twin Cities, it is not the epidemic that it was in the 70s and early 80s. Oak wilt is a major problem in Anoka County and in a few other places in the region. There is headway being made in slowing down the spread by use of the vibratory plow.

There are, unfortunately, other problems in the Twin City area, such as *Verticillium* wilt, gypsy moth, anthracnose, ash yellows, and forest tent caterpillar.

Although it is not directly an insect or disease problem, construction damage to trees contributes to the severity of problems caused by diseases or insects. Finally, there is the issue of planting vegetative materials that are not hardy in this area—this is also a source of stress and decline in plant materials that can be misdiagnosed as a disease or insect problem.

This is an abstract of a talk given by Alan Olson of DNR Forestry to the MNPS at its meeting on 7 December 1994.

Publications available from the Minnesota Extension Service

(see address on page 4)

FO-6135: Protecting trees from construction damage ($4)
MI-5898: Ash yellows in Minnesota ($1)
MI-3174: Oak wilt in Minnesota (free)
MI-3265: Dutch elm disease (free)

Three new members of the MNPS Board of Directors will be elected at the March 1 annual meeting

Three new members will be elected from the five candidates whose biographical sketches appear below.

Gerry Drewry. Gerry is interested in native plants and has been a member of MNPS for 6 years. She is a public relations consultant and journalist and operates a small farm. Through the federal Conservation Reserve Program, she planted one field with switch grass, one with bluestem, one with switch and Indian grasses, and another with trees. Gerry has prairie and woodland wildflowers near the house and a 2.5-acre restored prairie. She also has special interests in plants in her boggy 12-acre natural area that the DNR lists as a wet meadow. Gerry lives in Hampton, Minnesota.

Hildegard Graber. Hildegard's training was in Germany and Austria. She enjoys her own wildflower garden, rock garden, and perennial border plants—all developed over the last 30 years. She was an assistant professor in the University of Minnesota's Department of Psychiatry and she was employed for 9 years at the Boynton Health Service. Hildegard currently is a part-time consultant to the Department of Human Services for Ramsey County. She has been living in Newport since 1955.

Thor Kommedahl. Thor is a professor emeritus of the University of Minnesota's Department of Plant Pathology. He has taught courses in agricultural botany, plant science, and plant pathology, either in the College of Agriculture or the College of Biological Sciences. In addition to writing technical journal articles, and editing several books and journals, he has authored a book on *Pesky Plants*, and coauthored one on *Scientific Style and Format*. He currently serves as editor of *Minnesota Plant Press*. Thor lives in Falcon Heights.

Douglas Owens-Pike. Douglas is a native of the midwest and has degrees from the University of Wisconsin—Green Bay (plant ecology) and the University of Washington—Seattle (forestry). He started *Evergreen EnergyScapes* in 1989 which is a company engaged in landscaping for reduced energy use with native plants that require low maintenance. He provides full landscape service including designing and construction. Douglas was a registered lobbyist for the Wilderness Society in Washington, DC. He lives in Minneapolis.

Charles Umbanhower. Charles was born in Chicago but has lived in Syracuse, New York; Pocatillo, Idaho; and Northfield, Minnesota. He is a graduate of Carleton College and the University of Wisconsin (with a doctorate in botany). Charles has taught biology at St. Olaf College for 4 years. He is interested in the ecology of prairies and their disturbance, technology of fire in the Great Plains, restoration of prairies and oak savannas, and has surveyed wetlands in Rice County. His residence is in Northfield.

These candidates for the three board positions are expected to follow the guidelines listed in the editorial on page 2, column 1 of this issue. The candidates will be introduced at an upcoming regular meeting of the MNPS. You will have an opportunity to question them about their qualifications at that time before you vote.

Plant of the Month by Char A. Bezanson

Joe-Pye-Weed.—The "Joe-Pye-Weeds" commonly found in Minnesota (*Eupatorium maculatum* and *E. purpureum*) are pink to purple-flowered members of the family Asteraceae (Compositae)—the daisy or sunflower family. They are generally found in wet meadows and shallow marshes, and bloom in late summer. Other common *Eupatorium* species are *E. perfoliatum* (boneset or thoroughwort) and *E. rugosum* (white snakeroot), both of which have white flowers. All of these species are known to have medicinal or poisonous effects on humans; they are among the most pharmacologically active herbs, and many records of their use appear in the literature.

The Joe-Pye-weeds are tall, robust plants that vary in height from about 2 to 6 feet. Because they bloom in late summer and are superficially similar to each other, they can be confused at a distance with several other tall, purple-flowered plants such as marsh milkweed (*Asclepias incarnata*) and several purple-flowered asters. On close inspection, however, they are quite distinctive. The leaves are whorled in 3s and 4s (*E. purpureum*) or in 4s and 5s. The stems are speckled or purplish. The flowers are composites but have only disk flowers and do not display the showy ray flowers typical of daisies and other composites. These composite flowers are found in somewhat large, closely packed inflorescences; although they can be pollinated by insects, they can also be pollinated by transfer from head to head as they are blown against each other by wind.

Eupatorium maculatum and *E. purpureum* have several common names. Joe Pye reputedly was an Indian healer who lived in colonial New England, and who used this herb to cure typhoid and other fevers. Another possible source of the name is *jopi*—an Indian word for typhoid so another name is *jopiweed*. Other common names are king (or queen) of the meadow, gravelroot, kidneywort, purple boneset, tall boneset, and purple thoroughwort, among others. Many of these names refer to its medicinal properties such as a remedy for renal problems, especially kidney stones, and fevers.

The name "boneset" applies mainly to the white-flowered *E. perfoliatum*, and refers to its use in treating dengue or "bone-break fever." It was used also as a substitute for quinine in treating malaria The Ojibway Indians used it as an aphrodisiac and the Potawatomi used it as a talisman to give luck when gambling. All these species were used as emetics, purgatives, diuretics, or tonics.

As a garden plant, Joe-Pye-weed is easy to culture. It makes an excellent tall border flower, especially when mixed with goldenrods and white asters, and will self-sow readily. Wildflower gardener and former US Senator George D. Aiken called Joe-Pye-weed "a good-natured lummox, willing to grow anywhere for anyone." So if you have a sunny, wet spot and a bit of room, collect some seed and give it a try!

Environmental concerns

There are mountains in Attica which can now keep nothing but bees, but which were clothed, not so very long ago, with fine trees producing timber suitable for roofing the largest buildings, and roofs hewn from this timber are still in existence. There were also many lofty cultivated trees.

The annual supply of rainfall was not lost, as it is at present, through being allowed to flow over a denuded surface to the sea, but was received by the country, in all its abundance—stored in impervious potter's earth—and so was able to discharge the drainage of the heights into the hollows in the form of springs and rivers with an abundant volume and wide territorial distribution. The shrines that survive to the present day on the sites of extinct water supplies are evidence for the correctness of my present hypothesis.—Plato (427-347 BC): *Thanks to Tom Morley*

Botanical potpourri

GLEANINGS FROM NEWSLETTERS

Mentor Ranch, recently purchased in Minnesota by Nature Conservancy, was sold to the Minnesota DNR as an addition to the Dalea Wildlife Management Area in northwest Minnesota. It consists of 2,023 acres of unbroken prairie and includes tallgrass prairie on the shores of glacial Lake Aggassiz. (*Nature Conservancy* 44[6]:33, 1994)

Purslane (*Portulaca oleracea*), a well-known garden pest, can be eaten: 1) as salad with a vinegar-type dressing, 2) boiled (10 minutes) and served with butter and salt, or 3) microwaved (4 minutes), minced in blender, mixed with egg and bread crumbs and baked. (*Indiana Native Plant and Wildflower Society* 1[3]:1, 1994)

Thomas Jefferson ranked botany "with the most valuable sciences" in a letter on the subject of a school of botany and a botanical garden for the University of Virginia. Benjamin Barton named the genus *Jeffersonia* for twinleaf in 1792 because of Jefferson's knowledge of natural history, according to Lucia Stanton, Director of Research at the Thomas Jefferson Memorial Foundation in Monticello. (*Virginia Native Plant Society Bulletin* 13[3], 1994)

In Itasca State Park in Minnesota, 126 diatom taxa representing 45 genera were reported by Mark B. Edlund of the University of Michigan. These diatoms were found in Chambers Creek. (*Journal of the Minnesota Academy of Science* 59: 10-21, 1994)

Plants introduced from 1870 to 1930 into the United States by way of the Great Lakes included *Alnus glutinosa, Salix alba, S. fragilis, S. purpurea,* and *Rhamnus frangula,* and imported for use as ornamentals, medicines, or supplies for basket weaving. (*BioScience* 44:666-676, 1994)

Letters...

Will plants repel mosquitoes?
"I hear stories to the effect that there are no mosquitoes in the Seattle area. I also hear from time to time of certain farmsteads and other isolated areas in Minnesota where mosquitoes are not present. ... Could it be that such areas contain vegetation that is offensive to mosquitoes? Some people have reported that [mosquitoes] do not like basil plants. Others have mentioned ...scented geranium....If plants of a certain kind are known to chase [mosquitoes] away I would like to try planting some".—Andrew L. Freeman, Grand Forks, North Dakota
(B.T. Hunter [Gardening Without Poisons, *Houghton Mifflin, 1964] reports that essential oils from some plants are effective against mosquitoes and their larvae. She reports that 100% kills were made from using oil of sandalwood, bayberry leaves, pumpkin seeds, and black mustard; 95% kills with oil of basil, garden sage, sweet basil, sweet marjoram, balm of Gilead, and caraway; 90% kills with oil of rosemary, cypress, and hydrangea. Lesser kills were obtained with oil of butternut, rhubarb, prickly ash, comfrey and others.W.H. Lewis and M.P.F. Elvin-Lewis* [Medical Botany, *Wiley,1977] list 42 plant species that have been used as a source of insecticides. However, in all these examples, extracts are made from plants and the plants themselves were not reported to be mosquito repellent. A.D. Kinghorn* [Toxic Plants, *Columbia Press,1977] reports that pyrethrum in dried flower heads of* Chrysanthemum cinerariaefolium *and* C. coccineum *are used in anti-mosquito preparations. I.N. Dobelis* [Magic and Medicine of Plants, *Readers Digest Assn.] reports that dried leaves of tansy repel insects. —ed).*

Kudos from our hosts
"To wish you happy holidays and give thanks for your help in spreading the word about the Minnesota Valley National Wildlife Refuge, its wildlife management activities and public events. Your efforts are appreciated"—Joyce Dahlberg, Minnesota Valley National Wildlife Refuge, Bloomington.
(We enjoy the facilities and the association with personnel at the Center, and thank you for your comments—ed).

The History and Folklore of North American Wildflowers, by Timothy Coffey, published by Houghton Mifflin, Boston, 1993. 356 pages, $14.95 paperback.

This book is on popular lore, social history, and practical uses of 700 species of wildflowers. It is not a book on plant identification; instead it tells about specific plants used as foods, medicines, cosmetics, poisons, dyes, or fibers, from pre-colonial times to the present.

Plant Lore

What is prickly-ash?
Prickly-ash is *Zanthoxylum americanum*. It is a member of the Rutaceae, the rue or citrus family. It is a large shrub that can be 8 to 20 feet tall, with thorny stems and aromatic bark and leaves.

What is the origin of the generic name?
The Greek word *xanthos* means yellow and *xylon* means wood, which refers to the color of the wood.

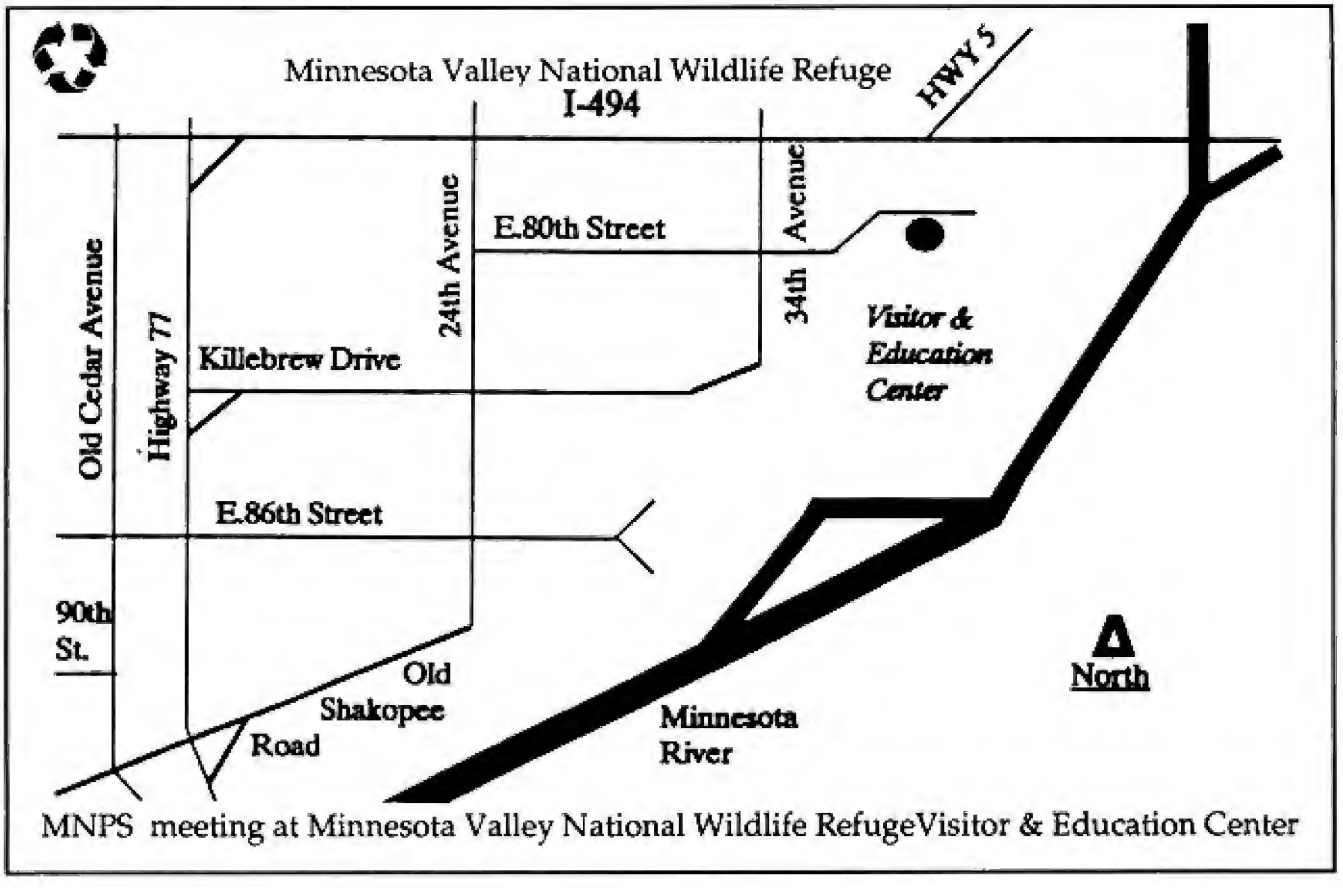
Where is prickly-ash found?
It is native from Quebec to North Dakota and south, in rocky woods and thickets, and is the only species in this family that is native to Minnesota.

How does the plant reproduce?
It reproduces by black and shiny seeds enclosed in brownish fruits; it also produces horizontal roots.

What are some distinguishing features?
Shrubs produce compound leaves with 2 to 5 pairs of leaflets, and an odd one. Leaves are somewhat thick and dotted with translucent glands. The yellowish green flowers occur in axillary clusters. Stout thorns occur in pairs at the bases of leaves.

Does it have any medicinal value?
Claims have been made that berries and bark can relieve rheumatism and toothaches, but these claims are not supported by research.

Minnesota Native Plant Society
University of Minnesota
220 Biological Sciences Center
St. Paul MN 55108



Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 14, No. 3 **Spring 1995**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

5:30-6:30 PM—Board Meeting, Room B
6:30-7 PM—Social Meeting, Room A
7-8:45 PM—Regular Meeting, Auditorium
9 PM—**Doors close sharply at 9 PM.**

March 1—Stan Tekiela, author. *Eatable Mushrooms: Gearing Up for Morels;* introduction to field trips; annual meeting and election of Board Members.

April 1—*Spring Symposium*—*Minnesota 's Coniferous Forests*, see page 3

April 5—Steve Eggers, ecologist, *Minnesota Prairie Preserves: A Photographic Journal*; Plant-of-the-Month: reed-canary-grass (*Phalaris arundinacea*) by Charles Umbanhower.

May 3—Plant Photography Contest, Minnesota Nature Photography Club; Annual Plant Sale.

•Spring Field Trips (see page 3 for details)

March 4— Snowshoeing, Tettegouche State Park.
March 15—Herbarium Tour, UM St. Paul Campus
April 26 & May 3—Warblers and Wildflowers, Nerstrand Big Woods State Park
April 29—Spring Wildflower Search, LeSueur
May 6—Wildflower Hike, Interstate State Park
June 16—Gardeners' Wildflower Weekend

•To pool rides to the **Minnesota Valley National Wildlife Refuge,** please call—*well in advance*—Grace Gray who will coordinate pooling

•For **Winter Weather Emergency,** contact Diane Hilscher, or her answering phone message to find out if the **Center** is open or not.

Wildflower Day in Williams

by Janet Boe

More than 10 years ago, while I was driving west of Baudette on Highway 11 in June, I saw enough showy lady's-slippers growing in the ditches along the road to take my breath away. Later, I learned that most persons living in Lake of the Woods County knew of this large population of the state flower and thought that this was something of a tourist attraction.

The late Larry Bernhoft, Area Wildlife Manager for the Department of Natural Resources for many years, had also taken an interest in the abundance and distribution of the orchids along the highway, and he mapped for several miles the location of each plant. Word must have gotten around because, before long, the Minnesota Department of Transportation became interested in designating Highway 11 between the fishing-resort cities of Baudette and Warroad as one of the state's Wildflower Routes—the first one. In June 1990, then-Governor Rudy Perpich was part of a grand tour that included ribbon-cutting ceremonies at each community on that stretch of Highway 11, celebrating the designation of the Route. Celeste LaValla and other wildflower enthusiasts had such a great time planning and taking part in that first celebration, that it became a yearly event.

The state flower.—The showy lady's-slipper, the centerpiece of this northern wildflower route, had been designated in 1902 as Minnesota's state flower. It is one of the state's 42 species of native orchids and is found in open, wet places in the north and east. Its scientific name is *Cypripedium reginae*, which comes from the Greek words *Cypris* (Venus) and *pedilon* (slipper) and the Latin word *regina* (queen). *(go to page 8, **Wildflower...**)*

Editorial

Garden biodiversity

Biodiversity has been a popular theme for several of our regular programs as well as topics in magazine articles. Ecologists are studying biodiversity in prairie, forest, and aquatic, even agricultural, habitats. And many biologists report the importance of biodiversity in our rain forests. But is not biodiversity applicable also to our backyard gardens?

Our backyard acreage becomes important as the wilderness area shrinks. So gardeners have an important role in preserving biodiversity. However, gardeners often restrict their plantings to two or three dozen species. "No wonder botanists are concerned about long-term survival of almost 4,300, about 20 percent, of this country's native species—plants that are critical habitat for countless other creatures" writes Janet Marinelli of the Brooklyn Botanic Garden.

In fact, she has edited a new work entitled *Going Native—Biodiversity in our Own Backyard*, published by the Brooklyn Botanic Garden. This book suggests that we re-create native habitats in our backyards that reflect the richness of the flora that is vanishing from our lands.

"What is a Biodiverse Garden?" is the title of the first chapter. Marinelli states that "Our current system of scattered nature preserves in a larger suburban landscape is not working as a biological safety net." To help preserve native species, we can emphasize planting of diverse native species and we of the MNPS do promote seed exchange of native plants as well as promote an annual plant sale in May. Perhaps we could do more.

In nine additional chapters America's top native landscape designers present sample biodiverse gardens each of which includes an extensive plant list for each region of the United States.

This 112-page book sells for $6.95 and can be obtained from bookstores or ordered from the Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn NY 11225, or call (718) 941-4044, ext. 260 or 261.

NEWS AND ANNOUNCEMENTS

Nine State Parks and Trails Projects recommended

The Legislative Commission on Minnesota Resources (LCMR) recommended funding of $11,536,000 for nine projects for state aquisition and development of parks, trails, and water access for both boaters and non-boaters. Of some 500 proposals received LCMR recommended 175 projects.—*LCMR Newsletter*, No. 8, Fall 1994.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson if you want to use it.

Plant photographic exhibit entry deadline is April 19

The Minnesota Botany International Exhibition of Photography has a closing entry date of 19 April 1995. The slide judging will be held Saturday, 23 April, 9 AM at St. George's Episcopal Church, 5224 Minnetonka Blvd. in St. Louis Park.

This local exhibition is sponsored by the Minnesota Nature Photography Club and selected slides are shown at the 3 May meeting of the Minnesota Native Plant Society. The entry fee for 4 slides is $5.00. Call Terry or Kathleen Schuller for entry form at

A symposium on *The Theory and Practise of Landscape Ecology* will be held 22-26 April 1995 at the Radisson Hotel Metrodome, 615 Washington Ave., SE, Minneapolis. For details. contact Nancy Grubb

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

Membership dues are $10 per year for regular members and includes subscription to the newsletter; dues for students and seniors are $8, for family $12, for institutions $20, and donors $25. Checks can be made out to: Minnesota Native Plant Society, and sent to : Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

Briefs from the Board

•Roy Robison volunteered to chair the new Outreach Committee.

•The Bylaws have been corrected and retyped, and copies will be included in new member packets.

•MNPS lecture posters were printed with suggestions for mailing, e.g., to nature centers and colleges.

•Board sentiment favored a metropolitan location for a symposium.

•MNPS agreed to cosponsor and support the Minnesota Landscape Arboretum prairie brochure.

•A handbook is being prepared by Rick Jannett, and a preliminary copy was reviewed.

•A 7-member committee was proposed whose charge was to study both long- and short-term goals.

•Attendance in January was 100, and in February 69.

Financial report for 1994

Cash on hand 1 January 1994	$ 3619.95
Income during 1994	7958.32
Total cash	11578.27
Expenses during 1994	8286.08
Transferred from checking to CD	1393.57
Balance on hand 31 December	1898.62*
Income	
Membership & Donations	$ 3049.00
Symposium	1760.00
Book (Orchids); member purchase	2502.00
Plant sale	281.00
Refund (overpaid bill)	260.51
MN Hort Society speaker	35.00
State flower show	25.00
Bank interest	45.81
Total income	**$ 7958.32**
Expenses	
Printing & copies	$ 2301.39
Postage	623.87
Speakers & articles written	650.00
Symposium	1006.25
Eats	611.93
Books acquired to sell	2400.00
Secretary	304.00
Prairie Day donation	100.00
Retreat	87.96
Magazine ad	30.00
Phone calls	21.23
Total expenses	**$ 8286.08**

*Plus CDs at TCF:
$613 for 13 months @ 4.67% due 13 July 1995;
$1129 for 23 months @ 4.92% due 9 April 1996;
$2500 for 23 months due 8 July 1996.

—Ruth Phipps, Treasurer

Spring Field Trips

Nancy Albrecht

1 Spring Wildflower Search in LeSueur County. Saturday April 29, 1995, 10 AM. Joint event with *Friends of the Minnesota Valley*, near Henderson. Explore a mile-long, wooded ravine at Sunny Heights farm—an 1854 homestead covering more than 600 acres enrolled in the Friends' Heritage Registry. The county has dedicated 350 acres as a wildlife refuge. There are level trails and steep slopes. The owner will share history of the area and show locations of orchids. Meet at the farmstead (1.5 hour drive from Twin Cities). Bring lunch, canteen, field guides, and notebook. Birders bring binoculars. Restroom facilites limited. For reservations and directions, call Ann Haines .

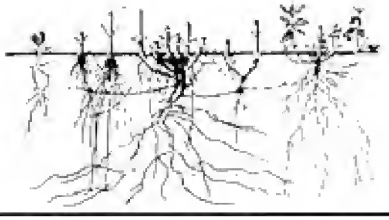
2 Snowshoeing at Tettegouche State Park. Saturday March 4, 1995, 12:30 to 5 PM. Bring snowshoes (or rent from store). Chel Anderson, ecologist and botanist, will be the leader. Meet at rest area and entrance to Tettegouche State Park, 4.5 miles northeast of Silver Bay on US Highway 61. Reservations required; the fee is $5.

3 Herbarium Tour. University of Minnesota, Biological Sciences Building, St. Paul Campus. Wednesday March 15, 1995, 3:30 to 5 PM. Tour the herbarium with Curator Dr. Anita Cholewa. Reservations required; the fee is $5.

4 Warblers and Wildflowers. Nerstrand Big Woods State Park, Wednesdays, April 26 and May 3, 1995, 7:30 to 9:30 AM. Tree identification and bird watching; wildflowers. Leaders Kim Chapman and Nancy Falkum and volunteer Kathryn Cassem. This park is 2 miles west of Nerstrand on County Road 40. Reservations required; park entry fee but no trip fee.

5 Spring Wildflower Hike and Work Party. Interstate State Park, Minnesota, Saturday, May 6, 10 AM. Meet Dave Crawford, State Park Naturalist at campground parking lot for a spring wildflower hike on the Curtain Falls Trail. Bring lunch and stay for a work party beginning at 1 PM to remove woody invaders from endangered rock outcrop prairies. Bring good walking shoes—the trail is 1.5 miles and steep—and work gloves. Reservations required. Call Dave

6 Gardeners' Wildflower Weekend. Deep Portage, Friday, June 16 to Sunday June 18. Enjoy a weekend in northern Minnesota at this unique learning and conference center located at Hackensack. The tour starts at the metro area with garden stops and will focus on wildflowers, northern forests and watersheds; experience classroom settings and guided hikes plus visit to local gardener's personal wildflower collection. Minnesota Horticultural Society and the Federated Garden Clubs of Minnesota are sponsors. Reservations required by May 25; cost is $130 (includes coach bus, accommodations, meals, tours). For details, contact Mary Olson at Vi Hague at or MSHS office at



The **Spring Symposium** on *Minnesota's Coniferous Forest Biome*, will be held Saturday, 1 April 1995 at the **Belwin Outdoor Education Center**, near Afton. Plan to bring a bag lunch, and we will eat and look at demonstrations and displays at noon. Volunteers to set up and clean up are wanted. Look for symposium brochure in the mail for registration.—Esther McLaughlin

Plant of the Month by Steve D. Eggers

Giant Reed Grass

Giant reed grass [or giant reed] (*Phragmites australis* [Cav.] Steud.) is a member of the Gramineae and is a common, native species of Minnesota's wetlands. It was known earlier as *P. communis*. *Phragmites* means "hedge-dweller" apparently referring to a common habitat, whereas *australis* means "southern". The former epithet of *communis* means "growing in clumps, common", which is applicable to this species. It is a stout perennial 2-4 m tall, typically growing vegetatively to form large colonies by rhizomes or stolons. A reed grass stolon measuring 13 m long was cited by Edward Voss, in *Michigan Flora*.

Giant reed grass produces a large inflorescence (20-40 cm) that takes on a feathery appearance when mature because of long, silky hairs. Spikelets are 3 to 7 flowered, but seeds are frequently sterile. Leaves are 1 to 5 cm broad and pennant-like. *Phragmites* is almost always found in wetlands ranging from wet meadows, to tamarack swamps, calcareous fens, and, most frequently, in shallow to deep marshes. It will grow in water nearly 2 m deep, but more typically in water from a few centimeters to 1 m deep. Few grasses can be confused with mature *Phragmites*. Wild rice (*Zizania aquatica*) is also a large, 2 to 3-cm-tall grass of aquatic habitats, but it is an annual with shallow roots—no stout rhizomes. Furthermore, wild rice has unisexual spikelets that are in separate parts of the inflorescence.

Along the Gulf and Atlantic coasts, *Phragmites* is often viewed as a weed because it can aggressively invade and dominate wetlands. The US Fish and Wildlife Service and other agencies have undertaken major efforts to control this grass, even by aerial spraying with herbicides.

In the Midwest, little attention has been given to *Phragmites* in this regard; however, in the lower Minnesota River valley, *Phragmites* is becoming dominant. Most disturbing is the ability of *Phragmites*, by means of its rhizomes and stolons, to spread across high-quality sedge meadow and calcareous fen communities and crowd out these species. While many attempts have been made to control purple loosestrife (*Lythrum salicaria*), *Phragmites* is doing the same thing that purple loosestrife does—invading, dominating, and forming extensive monotypes. The *Phragmites* invasion in the lower Minnesota River valley apparently started in the 1970s. One hypothesis is that an aggressive, coastal strain of giant reed grass has been introduced since the 9-foot navigation channel was dredged up to the city of Savage, in the 1960s. Just as commercial navigation in the Great Lakes inadvertently introduced several exotic species, perhaps the exchange of commodities carried by barges traversing the navigation network between the Gulf States, Mississippi River, and lower Minnesota River has introduced a coastal strain of giant reed grass. It is an interesting hypothesis.

I have been monitoring a study plot within the Savage Fen Scientific and Natural Area to measure how rapidly *Phragmites* is invading a calcareous fen community of sterile sedge (*Carex sterilis*), fen muhly grass (*Muhlenbergia glomerata*), shrubby cinquefoil (*Potentilla fruticosa*), valerian (*Valeriana edulis* var. *ciliata*), white lady's-slipper (*Cypripedium candidum*), and other fen species. In the first 3 years, *Phragmites* has advanced up to 2 m into the calcareous fen community at 13 of 21 stations, consisting of 123 new aerial shoots, which confirms 15 years of observations that *Phragmites* can slowly and steadily invade established fen communities. Whereas numerous species are found in calcareous fen communities (including special and state-listed threatened species), few species, e.g. stinging nettle (*Urtica dioica*), are found within large *Phragmites* colonies—hence our concern for loss of fen and sedge meadows and the need to find ways to control giant reed.

Botanical potpourri

GLEANINGS FROM NEWSLETTERS

•Putting black walnuts in a bench vise and screwing the clamp until the shell cracks is a safe way to shell them according to Dan Anderson. With a pair of diagonal pliers the shell can be snipped away to expose the nutmeats. (*Indiana Native Plant & Wildflower News*, Winter 1994)

•Symmetry improves a flower's reproductive powers. The more symmetrical the flower, the more nectar it produces and the better source of food for insects who selectively seek out such flowers according to A.P. Møller and M. Eriksson at Uppsala University, Sweden. (*Science News* 147[3]:46, 1995)

•Tree species diversity increases after a forest is disturbed, in most forest types, report M. Vasievich and S. Hobrla at the North Central Forests station in East Lansing, Michigan. (*NC News*, November 1994)

•Three more tracts of land (240 acres) have been added to Nerstrand Woods by the Minnesota Chapter of Nature Conservancy. This area represents the largest remaining block of the original Big Woods in Minnesota. (*The Nature Conservancy*, Minnesota Chapter Winter 1995)

•Exposure to electromagnetic radiation from power lines seems to increase growth of aspen, red maple and red pine, as well as algae in streams in Michigan according to Dave Reed of Michigan Technological University and Thomas Burton of Michigan State University. (Science 267:451, 1995)

•To study biodiversity, the National Biological Survey proposes GAP (Gap Analysis Project) which uses overlays of maps of 1) species distributions, 2) vegetation, and 3) ownership, to identify species richness and areas needing protection (gaps). (*Plant Science Bulletin* 40 [4]: 119-121, 1994)

Benefits of Growing Native Prairie Grasses

by Bettina Darveaux

There are many benefits from using native prairie grasses along Minnesota roadsides as well as in small-scale landscaping. Native prairie grasses were found to be successful in competing with leafy spurge (*Euphorbia esula*), thereby reducing the reliance on herbicides to control this noxious weed along Minnesota roadsides. The recent use of native prairie grasses on the shoulders and in slopes of highways, where elevated salt concentration in the soil is a factor, looks promising in providing vegetative cover in this critical environment. The use of native prairie grasses in small-scale landscaping provides a low-maintenance, esthetically pleasing garden alternative.

The use of native vegetation along roadsides has many advantages, one of which is the potential to provide better competition with invading weeds. In some recent research, we explored the ability of native prairie grasses to compete with leafy spurge using an integrated vegetation management approach. Field experiments were located in leafy spurge-infested areas and consisted of plots seeded with various perennial grasses in monoculture and in combinations. The effects of both the grass and herbicide treatments on the aboveground cover of leafy spurge were evaluated.

In the grass treatments the native prairie grasses little bluestem (*Schizachyrium scoparium*), sideoats grama (*Bouteloua curtipendula*), and buffalograss (*Buchloe dactyloides*) were well established and they significantly reduced the coverage by leafy spurge. The herbicide treatments picloram at 1.0 lb/acre and imazethapyr at 0.25 lb/acre effectively controlled leafy spurge but only for about 1 year. Th use of native prairie grasses as part of an integrated vegetation management program is a feasible long-term approach to control leafy spurge along highway rights-of-way in Minnesota.

Vegetation must be maintained adjacent to highway rights-of-way to control soil erosion, reduce hazards to motorists, improve highway appearance, and improve water flow to ditches or drainages. Cool-season, introduced grasses such as species of *Bromus* or *Poa* have traditionally been planted adjacent to roadways in Minnesota, but are unable to persist in this extremely harsh and very salty roadside environment. Short-statured native prairie grasses are currently being considered by the Minnesota Department of Transportation for this application because these grasses have many characteristics suitable for roadsides.

Some of these characteristics include good seed germination to give an initial flush of growth from overwintering plants (that typically occurs in late May or June after roadside salt accumulations have been flushed from soil by spring rains); deep root systems that enable plants to reduce soil erosion; and a generally short plant that reduces the need for frequent mowing. Both laboratory and field experiments are currently being done to evaluate native short grass prairie species used in several recently developed Mn/DOT roadside seed mixtures for their ability to germinate and provide adequate vegetative cover in the highly sodic, poor soils of highway slopes.

In addition to their usefulness along roadsides, native prairie grasses are also attractive and suitable for the garden. The native grasses provide interesting color and textures throughout the entire year, even in winter. After native prairie grasses have become established, which can take approximately 2-3 years, they require little maintenance and can provide years of seasonal interest.

This is a summary of a presentation to the Minnesota Native Plant Society *on 4 January 1995. Bettina is in the Plant Biology Department at the University of Minnesota, St. Paul.*

Old-growth forests are under study in Minnesota and Wisconsin

In Minnesota, old-growth forests are being studied at the Lowry Woods, in western Hennepin County. The objective of investigators Cindy Hale of the University of Minnesota—Duluth and Kurt Rusterholz of the DNR Heritage Program, working with David Mladenoff of UMD, is to develop descriptions of the structure and composition of old-growth maple-basswood forests, oak forests, and black ash swamp forests. These forests are to be compared with younger, more disturbed forests.

In Wisconsin, old-growth forests dominated much of the northern state's landscape before the European settlers came, but now only small fragments remain. Craig Lorimer, Sally Dahir and Matt Singer of the University of Wisconsin's forestry department are investigating hemlock-hardwood forest growth in northeast Wisconsin and the Upper Peninsula of Michigan. Their research is focused on identifying characteristics of existing old-growth forests as a blueprint for restoring younger stands.

Openings or gaps in the forest canopy that occur when trees die create a multilayered vegetation, a feature often missing in second-growth stands. Such openings are important to some bird species. Moreover, yellow birch among other species requires gaps for their survival. Gaps can vary in size from 10 to 1,400 square feet, and the rate of formation is about 7 percent of the stand area per decade, according to Sally Dahir. This means that an entire forest can go through a nearly complete turnover about every 140 years.—*Material selected from the Nature Conservancy, Minnesota Chapter Newsletter, and the University of Wisconsin College of Agriculture and Life Sciences Quarterly, Winter 1994).*

Minnesota Land Trust: Preserving Native Landscapes

by Renay Leone

The Minnesota Land Trust, like the nearly 1,000 other land trusts across the country, is a non-profit, tax-exempt organization dedicated to the preservation of open space. Like many other land trusts, we were formed to protect a certain area, farmland and bluffs in Washington County (in 1991), but after 2 years we expanded to become the Minnesota Land Trust, with chapters to be formed across the state. Currently, there are three chapters: Central Minnesota, with its focus on St. Cloud, Paynesville and Alexandria areas; East Metro, including Washington and Ramsey counties, plus parts of Chisago and Dakota counties; and West Metro, with Hennepin and Carver, plus part of Scott, counties as its territory.

The main focus of our work is to protect land from damaging development, to work with private landowners, local governments, corporations, and developers. We are not a governmental entity, so all efforts are voluntary and involve private agreements.

By far the most popular tool we use is the *conservation easement*. Unlike other easements for access or utilities or the restrictive covenants found in suburban subdivisions, the conservation easement covers the entire property and lasts forever. It prohibits subdivision of the parcel or development into multiple residential or commercial lots. Beyond that, a landowner can specify what he or she wants to be included in the easement. If the property is a family farm, there may be a desire to continue farming most of the tillable acres, with certain sensitive areas of woods or bog with native plants, set aside and kept as-is. The easement can allow 1 or 2 additional houses to be built, if that is important to the landowner and it does not negatively affect the conservation value to be protected.

There are several tax benefits available to a landowner who donates an easement over his or her property. First, an income tax deduction is available for the charitable donation of the easement. An appraisal must be done to determine the difference in value of the property before and after the easement is signed. That difference is considered a charitable donation on the landowner's tax return. Other tax benefits can include a reduction in property tax, depending on the current zoning and city or county tax base, and reduction or elimination of estate tax. All these benefits depend on the landowner's individual tax situation and should be discussed with an attorney or tax planner.

There are many opportunities for conservation easements to accomplish a landowner's goals. They can even help in situations where a landowner wants to donate land to a government agency but isn't convinced the land will be kept in its natural state. The easement terms apply to the land no matter who owns it. As the holder of the easement, The Minnesota Land Trust is obligated to enforce its terms. We monitor all easement properties at least yearly and will take whatever action is necessary to stop any violation of the easement terms.

Some of the parcels on which we currently have easements include: a 255-acre farm next to a river near Alexandria, 50 acres of woods and meadow in western Hennepin County, 5.5 acres of oak woods in the middle of Bloomington, and the Belwin Nature Center in Afton. It is not required that property contain endangered or threatened plants or animals for the land trust to consider it worth protecting. Any undisturbed open space—woods, wetlands, prairie, bluffs, lakeshore or farmland—will be considered.

For more information, call or write: Minnesota Land Trust, 70 N. 22nd Avenue, Minneapolis, MN 55411; (612) 522-3743.

Summary of a talk given at the February 1 meeting of the MNPS

Gateway Trail Wildflower Project

by Gary Perrault

One of the projects I've been designing over the past year will soon give bike riders and roller bladers new vistas as they travel along the 19-mile asphalt Gateway Trail.

During the summer of 1994, Phase 1 was started by creating a series of wildflower zones along the Gateway Trail through North St. Paul along a 1-mile strip parallel to Highway 36. The Wildflower Project was initiated to beautify the trail and entrances to North St. Paul. This became a mile-long urban wildflower demonstration area along what used to be the Soo Line Railroad. The Gateway Trail is the most used state trail in Minnesota.

When it is finished, 4-5 acres of vegetation, some previously mowed, will have been converted into native grasses and wildflowers. Trail users interviewed last spring had described this section of trail as one of the worst areas because of its appearance, traffic noise, and lack of "natural" scenery.

Science teachers from North High School are using the trail areas as outdoor classrooms. Students have gained hands-on experience in planting 1,100 wildflowers last October and in sowing seed on 10,000 square feet of land. Students in other classes have sampled soils to study soil profiles and textures. Still other students have been measuring distances and elevations to learn about land contours. This spring the project will continue with more planting and seeding. Biology students will start several species of wildflower seeds in class to learn about germination and growth rate.

Work on this project has had the support of many groups: MN DOT, DNR, City of North St. Paul, NE Metro Environmental Coalition, YMCA Earth Svc. Corp., North St. Paul Green, the North High School Science Department, Wakefield Garden Club, and the North St. Paul Business Association.

—Gary is an environmental horticulturist working with non-profit groups on project development and design

Update on the Endangered Species Act

The Endangered Species Act (ESA) is in danger of being dismantled under the title of *Job Creation and Wage Enhancement Act* (Title 8 of the Contract with America), according to Tim Eichenberg, of the Center for Marine Conservation. He reported that this action would 1) prevent government agencies from listing species as threatened or endangered; 2) make virtually impossible the designation of critical habitat to protect vital breeding, and migration areas of endangered wildlife; and 3) block regulations which prevent public resources, such as fisheries, from being overexploited.

The Merchant Marine and Fisheries Committee has had jurisdiction over the Endangered Species Act for the past 21 years of the law's existence. Gerry Studds, representative from Massachusetts and sponsor of HR 2043 has chaired this committee for the past 2 years. In the reorganization of the House of Representatives, one of the first committees selected for dismantling was the Merchant Marine, and members of this committee will be shuffled to other committees.

Don Young, Representative from Arkansas, is the new chair of the *Public Lands and Resources Committee* (formerly Natural Resources), and this committee will have jurisdiction over the Endangered Species Act in the House of Representatives.

John Chafee, Senator from Rhode Island will chair the Senate Environment and Public Works Committee. Senator Chafee has strongly supported the ESA in the past and was the leading cosponsor of S.921 in the previous Congress.

Those who want to support ESA should write to Don Young in the House of Representatives, and John Chafee in the Senate to urge passage of the Endangered Species Act. Some think that the best hope of saving ESA is in the Senate.

The Endangered Species Act can protect the United States in many ways according to the Endangered Species Coalition of the Audubon Society. Some of these ways are as follows:

•*The medicinal value of species.* ESA safeguards species that we rely on for medicines, even for cures not yet discovered.

•*Moral obligation.* ESA helps ensure a healthy environment for future generations.

•*Ecosystem protection.* ESA protects forests that improve air quality and wetlands that filter water.

•*Early warning systems.* Threats to human existence are identified.

•*Private property.* ESA protects private property from corporations that benefit from destruction of the natural world.

•*Economic value.* ESA protects jobs and strengthens the economy.

One can write to each of our two senators and our representative as follows: The Honorable (name of senator), US Senate, Washington, DC 20510; and The Honorable (name of representative), US House of Representatives, Washington, DC 20515.

The Endangered Species Coalition comprises 164 groups.

Minnesota has a list of threatened and endangered species

Revisions recommended in 1994 will be finalized in February 1995 and published in the state register. The *Minnesota Endangered Species Act* (M.S. 84.0895) requires that the DNR create and maintain this list, and that DNR consider revisions to the list every 3 years.

To obtain a copy of the current *List of Endangered, Threatened, and Special Concern Species,* a set of proposed revisions, and/or a copy of the *Endangered Species Act,* write to Richard Baker, Section of Wildlife, Minnesota Department of Natural Resources, Box 7, Lafayette Road, St. Paul, MN 55155; (612) 297-3764.

Plant Lore

What are bluets?
Bluets are plants in the madder family (Rubiaceae), closely related to bedstraw, with the genus name of *Hedyotis*, previously known as *Houstonia*. It has many other common names, e.g., Quaker-ladies or Quaker-bonnets. Plants are 4 to 8 inches tall.

When do bluets bloom?
These hardy perennials flower in midspring and get an early start from rosettes only an inch or two in diameter that have overwintered. A single flower stalk grows from the center of the rosette.

What are the flowers like?
They are usually white or pale purple, even deep purple, depending on species, and of two kinds. In one type, the male parts are long and the female parts are short. On the other type, the reverse occurs. On any given plant there is only one kind of flower, apparently to ensure cross pollination.

How are bluets pollinated?
One of the many insects that visit bluets is the beefly that can hover over the blossom like a hummingbird. It resembles a small bumblebee and its mouthparts can reach into the long tubes to suck out the nectar.

What kinds of fruits do bluets produce?
Bluets produce small capsules with two chambers, each of which is filled with tiny, loose, black seeds. Winds shake the pods to disperse seeds.

Do plants reproduce only by seeds?
No, it also produces rhizomes that produce new rosettes in fall or the next spring.

Where are bluets found?
They usually grow in dry, sandy or rocky, undisturbed, open areas in the state.

NATIONAL NEWS

Environmental concerns are addressed in memo on federally landscaped grounds

A presidential memorandum on *Environmentally and Economically Beneficial Practices on Federally Landscaped Grounds* was released for comment in a notice published in the *Federal Register*. Comments were received from many groups that included state and federal agencies, conservation groups, municipalities, and native plant societies.

The priorities in the memorandum are to:

- Use regionally native plants.
- Design, use or promote construction practices that minimize adverse effects on the natural habitat.
- Seek to prevent pollution by, among other things, reducing fertilizer and pesticide use, using integrated pest management techniques, recycling green waste and minimizing runoff.
- Implement water-efficient practices, such as the use of mulches, efficient irrigation systems, audits to determine exact landscaping water-use needs, recycled or reclaimed water and plants in a manner that conserves water and controls erosion.
- Create outdoor demonstrations incorporating native plants, as well as pollution prevention and water conservation techniques, to promote awareness of the environmental and economic benefits of implementing this directive.

Agencies are encouraged to develop other methods for sharing information on landscaping advances with interested nonfederal parties. (*Landscape Architecture News Digest* 27[1]:1995)

Starflower (*Trientalis borealis*) has an elegant, dainty silvery flower that grows in woods alongside of violets—some call it May-star. It is a perennial rhizotomous herb native to Minnesota.

Wildflower Day in Williams

(continued from page 1)

Flower structure.—The feature of the plant that draws our attention immediately is its unusual-looking flower. As one of the most evolutionarily advanced flowers of the world, the lady's-slipper flower structure includes lots of fusing and twisting of parts, all to accommodate the small animals that pollinate the plant. The most striking part of the flower is the lip (the part that someone thought looked like a "lady's slipper"), which is actually an enlarged, inflated petal.

Slow growth.—Years ago, when my mother was a small-town elementary school teacher, someone brought her a huge bouquet of showy lady's-slippers. She was at once amazed and dismayed because she knew about another unusual feature of these species: they have a very long, complex, and difficult-to-duplicate process of developing from seed. The tiny orchid seeds require an association with a specific fungus in the soil to germinate and grow, and it takes 15 to 20 years for seedlings to develop into mature plants. Fortunately, once a plant develops it lives for many years unless someone uproots it. For this reason, these orchids need all the help that they can get and are protected by state law. Luckily, my mother's young pupil didn't uproot the plants, but he did prevent the plants from producing seeds in that year.

Habitat.—Low, flat land crisscrossed by sandy ridges, compliments of glacial Lake Agassiz thousands of years ago, makes Lake of the Woods County ideal orchid country. Although lady's-slippers are found all along Highway 11, as well as along other roads in the county, there seems to be a concentration of them near the city of Williams. Here, in this city of 300 people located near the ancient Campbell Beach of glacial Lake Agassiz, drinking water is available from a flowing well at Ladyslipper Park. Four miles to the west, a state forest campground—Blueberry Hill—is located in a stand of jack pine on the sandy beach ridge. Zippel Bay State Park, on the shore of the Lake of the Woods, 10 miles northeast of Williams, was abandoned by early settlers disgusted with its sandy soils; it is now a public playground with several campgrounds, a boat ramp, a swimming beach, and hiking trails.

Wildflower Day.—During the week of bloom for showy lady's-slippers, about the third week in June, a day is set aside for reveling in their beauty and abundance: it is called Williams Wildflower Day. This event is organized by the Williams Gardeners, with members from Baudette to Warroad, and this Day attracts nature buffs from across the state. The afternoon celebration includes a slide program on wildflowers, refreshments by garden club members, a guided wildflower tour that includes orchids and other wildflowers in bloom, and an exhibit of paintings by local wildlife and wildflower artist Thomas Parr Williamson. There is a drawing for one of his prints. All then adjourn to the roads and ditches to admire Nature's handiwork, and look for ever-larger clusters of blossoms, snapping pictures of "the best ones", perhaps coaxing a new friend to guide the trip to a rare cluster of all-white "showies".

This year the Wildflower Day celebration will take place on Saturday, June 17, from 1 to 4 PM at St. Joseph's Catholic Church in Williams. If you must miss the celebration, but would like to see the showy display of lady's-slippers, be sure to visit them during their blooming period, from mid-June to early July. For more information about this Day, call Celeste LaVilla at The Rustic Planter, in Roseau (218) 386-2744). Williams is 15 miles west of Baudette.

For more information on the showy lady's-slipper, consult Welby R. Smith's book, *Orchids of Minnesota*, University of Minnesota Press. Also, see *Vascular Plants of Minnesota*, by G.B. Ownbey and T. Morley, University of Minnesota Press.(ed.)

Illustrated Field Guides for Minnesota Wildflower Watchers

prepared by Char Bezanson, St. Olaf College

This is a list of guides useful for identifying plants in Minnesota and Eastern North America

Guides specific for Minnesota or the Great Lakes Region

•**Northland Wild Flowers: A Guide for the Minnesota Region**. Moyle and Moyle, University of Minnesota Press, 1977. Especially good for spring flowers. 300 photos.

•**Wildflowers and Weeds.** Courtenay and Zimmerman, Prentice-Hall, 1978. 700 small photos. No grasses.

•**Roadside Plants and Flowers.** Edsall, University of Wisconsin Press, 1985. Weeds and native plants of Midwest and Great Lakes areas. Approximately 125 plants and more than 250 photos.

•**Wildflowers of the Northern Great Plains**. Vance, Jowsey and McLean, University of Minnesota Press, 1984. 400 species, 650 photos. Good for prairie plants; no grasses.

•**Wildflowers of the Tallgrass Prairie: The Upper Midwest.** Runkel and Roosa, Iowa University Press, 1989. 130 prairie plants including grasses. Plants arranged in order of bloom.

•**Common Wildflowers of Minnesota.** Monserud and Ownbey, University of Minnesota Press, 1971. Out-of-print, but search used bookstores. 306 plants, no grasses; line drawings.

•**Pods: Wildflowers and Weeds in Their Final Beauty.** Embertson and Conrader, Charles Scribner, 1979. More than 150 species, dry fruits autumn and winter. Photos of plant in flower, dry fruit and inflorescence, and plant used in dry arrangements.

•**Ferns of Minnesota.** Tryon, University of Minnesota Press, 1980. Keys and color photos, line drawings, and distribution maps.

•**Orchids of Minnesota.** Smith and Wong, University of Minnesota Press, 1993. Field guide and scholarly treatise. 43 species in Minnesota. Color photos, line drawings, distribution maps. Biology of orchids.

•**Vascular Plants of Minnesota: A Checklist and Atlas.** Ownbey and Morley, University of Minnesota Press, 1991. Not a field guide. Book of distribution maps of Minnesota plants.

Guides to Eastern North America, including Minnesota

•**The Audubon Society Field Guide to North American Wildflowers: Eastern Region.** Niering and Olmstead, Alfred Knopf, 1979. East coast to Rocky Mountains. A photographic guide; 700 flower and fruit photos, arranged by color.

•**Wildflowers: Northeastern/Northcentral North America.** Peterson and McKenny, Houghton-Mifflin, 1968. USA and adjacent Canada. 1300 species arranged by flower color and shape, line drawings. Field recognition characters. Excludes trees, shrubs, grasses and ferns.

Remember

No one field guide is appropriate for all uses. Minnesota is located at the juncture of the Eastern Deciduous Forest and the Great Plains grasslands, so guides that cover eastern United states may be sketchy for prairie plants. Similarly, western plant guides may not include woodland species. Technical keys are useful for professionals and serious hobbyists, but often do not provide for ways to check identification against a picture. Many guides are incomplete. The solution may be to use several guides. Most of these sell for $10 to $20 and are available at bookstores at the University of Minnesota or the Minnesota Valley National Wildlife Refuge bookstore, or other bookstores by special order. The classical manuals are **Gray's Manual of Botany** by Fernald (8th edition) or **Manual of Vascular Plants** by Gleason and Cronquist.—Char Bezanson

Minnesota Native Plant Society
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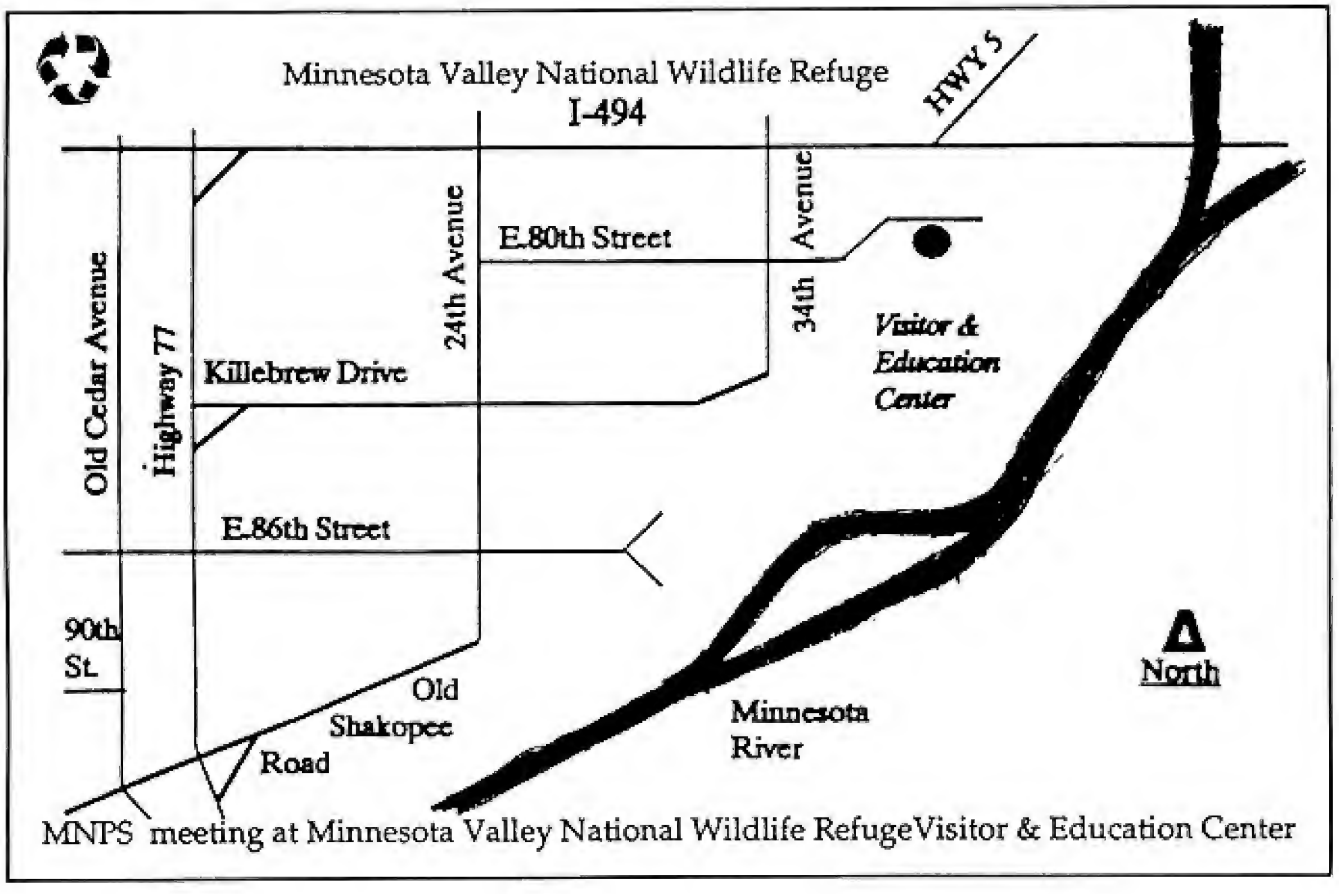

Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 14, Number 4 **Summer 1995**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

July 25, 1995. New-Board Meeting, University of Minnesota, 491 Borlaug Hall, St. Paul Campus, 6:45 PM.

Summer Field Trips (see page 3, column 3)

August 12 **Iron Horse Prairie,** Dodge City
August 12 **Prairie Day**—Arboretum
August 12 **Prairie Wildflower Hike**, St. Croix
All summer: **Bakken Physic Garden**, Monday-Saturday, Minneapolis

Regular Meetings

October 4, November 1, December 6, 1995. January 3, February 7, March 6, April 3, May 1, 1996.

Seed Exchange November 1, 1995

Deadline for Fall Issue is September 1, 1995.

The Fall issue will contain the dues statement and a Directory of Members. If your dues are paid up, you will be listed in the Directory.

Please send suggestions for topics and speakers for the regular programs to Charles Umbanhowar.

Minnesota Native Plants: Now on-line

Those with interest in any aspect of native plants of our area could find this kind of dedicated mailing group to be a valuable resource.

Functions include

- Plant rescue: notification, coordination
- Garden "chat": notes on the passing scene, materials to share, horticultural discussion
- Field trips (personal, MNPS, TNC, other): calendar of events, trip reports, ecological notes and discussion
- Government related: political information, action, coordination; planning input
- Visitor contact point: e.g., for those seeking field trip/resource suggestions or wanting to contact peers
- Mechanism for sharing net resources: e.g., materials from other state native plant mailing groups

The group (list) is served by the University of Minnesota mainframe and is free. Anyone can subscribe but only members can read from it or review the membership: it is not anonymous. Messages (files) are not edited or moderated. Nonmembers can send files. All files should be *signed* (in addition to your address in the heading) and appropriately titled.

To subscribe

- Send E-mail to: listserv@vm1.spcs.umn.edu
- Leave subject blank.
- In the text: SUBSCRIBE MN-NATPL your name (not address) or (UNSUBSCRIBE MN-NATPL your name)

For correspondence to the group, send E-mail to MN-NATPL@vm1.spcs.umn.edu

For questions, call Robin Fox

We thank Robin Fox for setting up this procedure for our use [ed].

May Wright 1905-1995

May Wright, a founding member of the MNPS in 1982 and a great source of gardening lore and inspiration to native plant enthusiasts all around the Twin Cities, passed away May 4, 1995. Her expertise in gardening with native plants, especially those grown from seed, was legendary, but more telling than her expertise was her lively enthusiasm. She wrote articles for the *Minnesota Plant Press*, helped with our seed exchanges and plant sales, and generally was a font of information and an inspiration to all. May was easily the First Lady of Native Plant Gardening. Some of us were lucky enough to have had a guided tour of May's own garden. The only MNPS Spring Symposium honoring an individual was the 1990 Symposium dedicated to May on gardening with native plants. May was involved to the end and in April attended this year's Spring Symposium at Belwin Center.

May was a biologist by profession as well as by avocation. She had a Ph.D. degree in ecology from the University of Chicago, and worked for many years as a statistician for the Department of Agronomy and Plant Genetics at the University of Minnesota. Thus her gardening enthusiasms were backed up by a thorough knowledge of biological principles. During her many years of living in White Bear Lake, she planted her own native plant garden and developed her knowledge of the cultivation of native species—all at a time when native plant nurseries were unknown in the area, few people were interested in native plant growing, and there was no MNPS. She developed different habitat areas in her garden, and carefully investigated the best ways to successfully germinate seed of each species.

May first expressed an interest in plants in grade school in Chicago where she took a summer course in botany, an interest encouraged by her parents. In college, she studied science and mathematics as an undergraduate, then obtained a masters degree in genetics. However, it was in graduate school in ecology that she began the study of seed germination and began to think about plants in their natural settings. These interests led to her contributions to our knowledge of the propagation of native plants. Some are cited in the *Directory to Resources on Wildflower Propagation*, prepared at the Missouri Botanical Garden in 1981 for the National Council of State Garden Clubs; a more extensive account appears the same year in her papers on *Domesticating the Wild Flower* in the Minnesota Horticulturist (vol. 109:100-104, 121) and with Margaret Smithburg in the same issue on *Cultivation and Germination Procedures for Wild Flowers* (pp. 105-108). Other accounts of May's contributions to native plant gardening in Minnesota can be found in the Minnesota Horticulturist (vol. 109:109-111, and last May on pages 22-25).

We will miss May's vast knowledge of native plants and their cultivation, but most of all we will miss her unfailing good humor, enthusiasm, and energy for the subject which unites us.—Esther and David McLaughlin.

Esther, Biology Department, Augsburg College; David, Plant Biology, University of Minnesota.

Species 2000 to count all known species of plants, animals, fungi and microorganisms on Earth

Species 2000 is a project initiated by the International Union of Biological Sciences and its objective is to count all life forms on Earth. A master species database will be created globally to enable study of diversity. It will serve as a clearing house for taxonomic data on the world's known species. Rapid progress is expected during 1995. Information can be obtained from Species 2000 Secretariat, Biology Department, University of Southhampton, Southhampton, SO16 7PX, UK. Fax +44 1703 592444. E-mail sp2000@soton.ac.uk

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

Membership dues are $10 per year for regular members and includes subscription to the newsletter; dues for students and seniors are $8, for family $12, for institutions $20, and donors $25. Checks can be made out to: Minnesota Native Plant Society, and sent to : Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

Briefs from the Board

•The 1995-96 officers elected are: Char Bezanson, president; Charles Umbanhowar, vice-president and program chair; Ruth Phipps, treasurer; and Christine Drassal, secretary.

•MNPS *Guide to Spring Wildflowers in the Twin Cities Region* will be revised by fall 1995, by Jim Schuster and John Moriarty.

•Board retreat was set for June 14 on St. Paul Campus (Room 491 Borlaug Hall), with Becky Schirber as convener.

•Roy Robison reported that 90% of MNPS members live in the 7-county metro area.

•Esther McLaughlin reported 74 paid registrants to the Spring Symposium. The symposium was videotaped by Gary Perrault.

•The policy was restated that MNPS does not lend out its mailing list.

•The long range planning committee was renamed the Goals and Planning Committee (GAP), and will meet July 17, 1995.

•The Orientation Manual for Board Members is being assembled by Rick Jannett.

•Don Knutson will chair again the Symposium Committee for 1996.

•Incoming Board members are: Gerry Drewry, Thor Kommedahl, and Charles Umbanhowar.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson at 612-721-6123 (work) or 612-379-7314 (home) to request it.

Spring Conference at Belwin on Minnesota's coniferous forests attracted 74 participants

This Conference was held at the Belwin Outdoor Educational Laboratory, in Afton, Minnesota, on Saturday, April 1, 1995,

Naturalist Ron Winch started by showing some outstanding photos of northern forests. Jan and John Green followed with an overview of Minnesota's conifers.

Plant succession at Seagull Lake within a forest was illustrated by Lee Frelich, ecologist at the Department of Natural Resources in the University of Minnesota. The interrelation between white pine forests and wildlife was described by Lynn Rogers from Ely, Minnesota.

Welby Smith, botanist for the DNR of Minnesota, depicted the gorgeous orchids that inhabit coniferous forests in the state.

Many participants enjoyed the walk around the rich, wooded area of the Belwin outdoor laboratory.

We congratulate Don Knutson for planning another successful conference, and Esther McLaughlin for arrangements in obtaining use of the facility. We thank all who helped in parking cars and cleanup of the buildings and grounds, and Janice Odegaard, Environmental Coordinator, Belwin Outdoor Laboratory.

MERP is a biodiversity conservation organization

The Minnesota Ecosystems Recovery Project (MERP), formed in 1992, is based in Red Wing, Minnesota. Its main focus is to conserve native biodiversity and covers the tallgrass prairie, northern coniferous and deciduous hardwood biomes of Minnesota. These three biomes converge at the three major drainage systems of North America. Within the state are nine major watersheds and more than 50 natural community types. For more information, contact MERP, POB 293, Red Wing, MN 55066; (612) 385-7512.

Summer Field Trips

Nancy Albrecht

August 12, 1995 9 AM to 4 PM
Iron Horse Prairie, Dodge City. Leader: Steve Eggers, Ecologist with the US Army Corps of Engineers. One of the best preserved mesic-to-wet prairies and indicator plants of threatened and endangered species. Car pool from south metropolitan area. For directions, call the director

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August 12 8:30 AM to 3:30 PM
Prairie Day—Minnesota Landscape Arboretum and Schaefer Prairie. Meet at Landscape Arboretum (Highway 5, Chanhassen). Reservations required. Please call *Nature Conservancy* (612-331-0750). Fee is $22 for members of either *Nature Conservancy* or *Minnesota Landscape Arboretum;* $28 for non-members. Fee covers travel and lunch.

August 12 10 AM to 11:30 AM
Prairie Wildflower Hike. Wild Rivers State Park, Leader: Dave Crawford. Meet at Park Contact Station. Reservations not required. Trip will follow Dry Creek Prairie—one of the better remnants of prairie along the St. Croix River. No fee but state park vehicle sticker is required.

All summer:
The Bakken Physic Garden Monday-Friday 9 to 5; Saturday 9:30 to 4:30. Tours by appointment only. 3537 Zenith Ave. So., Minneapolis, MN 55416; (612) 927-6508. Fee $3; $2 for students and seniors. "Physic" is an archaic term for medicine, so a Physic Garden is one that contains medicinal plants. Seventy-one species of herbs, shrubs and trees with medicinal properties are grown in this garden. A list is available for visitors to the Garden.

Eatable Mushrooms: Gearing Up for the Morels

Stan Tekiela

So, you want to hunt for morel mushrooms (*Morchella* spp.) this spring; you say that you can't tell the difference between a morel and a hubcap, and you missed my talk, given at the March meeting of the Minnesota Native Plant Society; well here is another chance to learn about these fungi.

Morels represent common spring-time mushrooms in Minnesota, and, yes, it is a native fungus. Depending on whom you talk to, there are six to 12 different kinds of morels, most of which occur in Minnesota. All are edible and very tasty. Don't be fooled—there are several false morels. Some of these are imposters but edible, and some are poisonous. One should be careful.

Morels share common characteristics. Look for a cap that is riddled with pits and ridges; not folds and creases. Spores are produced on the pits and ridges. Mushrooms that have the folds and creases instead of the pits and ridges are the "I-want-to-be" mushrooms and are not edible.

True morels have hollow stems. When a morel is cut in half—the long way—one can see that the stem is hollow, like a straw. Any cottony material within the stem indicates that it is a false morel. In all but one kind of morel, the cap of the morel is attached directly to the stem. This means that the top of the stem is attached to the bottom of the cap. This is easy to see when you cut the mushroom in half to check for the hollow stem.

All morels grow on the ground and not on wood, except for some unusual exceptions.

In Minnesota, we find morels in May. Most morel hunters time their hunting with other signs of nature, such as when oak leaves are the size of squirrel's ears, when lilacs are blooming, or when apple trees or trilliums are in bloom, or some similar indication. Start looking for morels in southern Minnesota in early May and in northern Minnesota in late May.

Most successful morel hunters concentrate their search near dead elm trees or along banks of major rivers such as the Minnesota or Mississippi rivers. South-facing, well-drained hills are another favorite spot. One thing for sure, mushroom hunters do not reveal their favorite locations for finding morels. If someone does tell you where to find morels you have to be suspicious that you are being sent on a "wild goose chase."

If you find some of these elusive fungi, collect them in a wicker basket or paper bag—never in a plastic bag. Wicker and paper allow the mushroom to "breathe" and stay fresh longer. It's not a good idea to eat morels or any other mushrooms raw. Cooking will help kill bacteria and aid in digestion of mushrooms—some people have special difficulty in digesting mushrooms.

This summarizes briefly a 90-minute talk. Good luck, and remember "when in doubt, throw it out!" Learn mushroom identification by consulting appropriate references.

This is a brief summary of a talk given by Stan Tekiela, at the meeting March 1, 1995, of the Minnesota Native Plant Society. Stan is the author of the book "Start Mushrooming."

What is a bird's nest fungus?

Its name is *Cyathus striatus* and it has a vase-shaped fruiting body smaller than a dime and covered at first with a thin, hairy membrane that ruptures at maturity. Inside the vase are several drab to black "eggs" (peridioles) at the bottom, each containing spores. Each fruiting body is attached to its woody host with a cinnamon-brown pad of mycelium. It grows in groups on bark, sticks, or other woody debris in spring, summer, and fall during wet periods. It is widely distributed.

The Bookshelf

Guide to Minnesota Prairies. This 72-page book published by the Natural Heritage Program of the DNR in 1984 has been reprinted in 1995. It is an introduction to the diversity of prairie types found in the state and the assessment of the ownership and protection status of Minnesota prairies as well as a directory to 40 selected prairie preserves. It is available from Seth Kammen Enterprises, 3355 Hiawatha Avenue South, #203, Minneapolis, MN 55406; 642-9568. It sells for $14 which includes postage and tax.

Scientific and Common Names of 7,000 Vascular Plants in the United States, by L. Brako, A.Y. Rossman, and D.F. Farr. This 295-page softcover volume (8.5 by 11 inches) was published in 1995 by APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121-2097. It sells for $29 plus $3.50 for shipping and handling. Or call 612-454-7250 if ordering by credit card. The names are listed first by scientific name and again by common name. A list of synonyms and a listing by family are included.

North American Native Orchid Journal is a new quarterly journal published by the North American Native Orchid Alliance—a group dedicated to the conservation and promotion of our native orchids. The first issue was in March 1995, and included articles and orchid news, a checklist of North American orchids, and book reviews. Membership includes subscription to the journal of $22 per year. The editor is Paul Martin Brown of Jamaica Plain, Massachusetts. To join, write to Nancy Webb, 84 Etna Street, Brighton, MA 02135.

Orchids occur in every county in Minnesota.

Minnesota's system of parks and trails is reputed to be among the best in the United States

The Minnesota Parks and Trails Council has been organized to further the establishment, development and enhancement of parks and trails in the state and to encourage wise use and protection of these lands. Recent land acquisitions have been Magney State Park (80 acres), Tettegouche State Park (5 acres of shoreline), Whitewater State Park (10 acres), Afton State Park (30 acres along the St. Croix), Lake Bemidji State Park (small addition), Banning State Park (200 acres), Sibley State Park (17 acres), Crow Wing State Park (80-acre island and 58-acre peninsula) and the Harmony-Preston Trail (Preston to the Root River).

Seven other parcels are being held for disposition. Other ongoing projects include property on the Pigeon River, Illgen Falls property at Tettegouche State Park, Split Rock Lighthouse State Park, the North Shore's Devil Track River Area, White Bear Lake "Round the Lake" project, Mississippi River blufflands trails in Frontenac State Park, and work with several counties on land development.

This group has also been involved in Lake Superior Water Trail legislation, securing a bonding bill to get funds for state park and trails acquisitions and development, getting permits for persons with disabilities, and work on plans for developments along both the Mississippi and St. Croix rivers.

More than 8 million people visit our parks and 7 million our trails. This has been a 50% increase in the past 10 years.

If interested in information, membership, or a newsletter, contact Minnesota Parks & Trails Council, PO Box 26243, St. Paul, MN 55126-0243. Or call (612) 631-2818, or (800) 944-0707.

Say **Thank You** to outgoing officers and members of the Board next time you see them!

Botanical potpourri

GLEANINGS FROM NEWSLETTERS

•A newly discovered plant species and 50 populations of rare plants were found near the site of the Hanford nuclear facility in southeastern Washington reports Ron Geatz. This 560-square-mile site has been off-limits to the public for nearly 50 years and the future of this site is under study.—*Nature Conservancy* 45[3]: 7, 1995)

•Roadside plantings by the Minnesota Department of Transportation tend to focus on native plants and flowers instead of non-native grasses reports Ron Shara. Since 1984, DNR has had a roadside wildlife specialist who currently is Cathy Fouchi. More than 20 bird species are known to utilize roadsides for nesting habitat.—(*Roadsides* 1[4]:6, 1994)

Floristic data are becoming increasingly important for regional biological inventories, impact assessment, research, management decisions, and policy formulation according to M.W. Palmer and P. Neal of Oklahoma State University, and G.L. Wade of the US Forest Service in Vermont. A resurgence in floristic research is hoped for, especially with the application of computers.—(*BioScience* 45:339-345, 1995)

About 500 acres of land adjacent to the Bluestem Prairie in the Red River Valley is being sold to Round River, Inc., in Princeton, Minnesota, subject to a conservation easement that permanently protects the praire remnants on the land. The objective of this transaction is to establish a local supplier of native seed and restoration services in the Red River Valley according to Jim Erkel in the Nature Conservancy Minnesota Chapter, Spring 1995.

Common milkweed was named *Asclepias syriaca* by Linnaeus who mistakenly wrote that plants came from the Orient. It was introduced early into southern Europe. Asklepios was the Greek god of medicine

Plant Lore

What is white-sage?
White-sage is not a sage (*Salvia* spp.) but is a composite, known as *Artemisia ludoviciana*. It is known also as prairie-sage, and western mugwort and is native to northern North America, including Minnesota.

Where is white-sage found?
This small, perennial shrub grows in prairies, in open dry soils and thin woodlands throughout the state.

How is it distinctive?
The aromatic leaves, resembling willow leaves, have fine white hairs on upper and lower surfaces to give leaves a whitish, felt-like appearance. The shrub produces long rhizomes.

How did it get its name?
Some say it was named after the Greek Artemis, daughter of Zeus and sister of Apollo. Artemis was the virgin huntress and goddess of wildlife, childbirth and all young things. Others attribute the name to Queen Artemisia, of Caria, Asia Minor. Ludoviciana is Latin for louisiana, or "of St. Louis".

Does white-sage have any historical significance?
It was perhaps the most important ceremonial plant of many Native American tribes. They decorated their ceremonial lodges with this plant. Leaves were burned as an incense to drive away evil spirits and the ominous and persistent dreams of sick persons. It was used also to purify implements and utensils.

Does it have any medicinal properties?
Native Americans used this plant as an astringent and for treatment of stomachaches, diarrhea, fevers, rashes, and headaches. However, some people develop an allergy to this plant and contract dermatitis.

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